Devoted to
TEXTILE
CHEMISTRY
BLEACHING
DYEING
PRINTING
FINISHING

UARY 17, 1944
UME 33, No. 2

AMERICAN DYESTUFF REPORTER

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ACADEMY OF MEDICINE
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Use Geigy Service
in your Post-War Planning

We're not all going back entirely to pre-war products or pre-war procedures. Every one of us has learned a great deal through necessity and what we have learned will be put to use in post-war planning and production.

In the process of crystallizing fact from theory, Geigy's experience in coloring should be taken advantage of . . . an experience of 85 years in the field of synthetic dyestuffs.

Geigy is jealous of the confidence and trust displayed by its customers in their requests for Geigy Service in their post-war planning.

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ICIAL PUBLICATION
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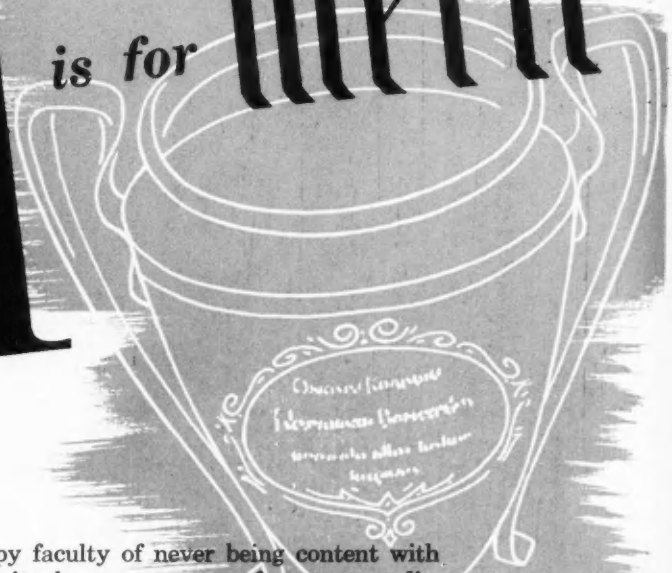
RICAN ASSOCIATION
TEXTILE CHEMISTS
AND COLORISTS

M is for MEDIOCRE

M is for merit



Responsible chemical researchers have a happy faculty of never being content with results that are only just "good enough." That is why so many manufacturers are discovering that an increasing number of wartime chemical developments regarded at first as only *temporary* replacements for war-critical materials, are now destined for a *permament* place in their manufacturing processes.

Already many of the new war-born chemical products, (and old, long-known, time-proven materials for which timely chemical research has revealed valuable new uses,) have demonstrated in both military and civilian goods applications important advantages that may be applied to economically improve results under competitive peacetime conditions.

Here at Cyanamid, we have considered it an essential part of our wartime services to make available to those in both military and civilian industry, the practical results of our broad and intensive chemical research and development. If you have a wartime problem or a post war plan that the "right" chemicals may help to solve, consult with Cyanamid *now*.

AMERICAN CYANAMID
& CHEMICAL CORPORATION
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SULPHONATED OILS • PENETRANTS • FINISHES • SOFTENERS
SIZING COMPOUNDS • DECERESOL* WETTING AGENTS
AND OTHER SPECIALTIES FOR THE TEXTILE INDUSTRY
*Reg. U. S. Pat. Off.

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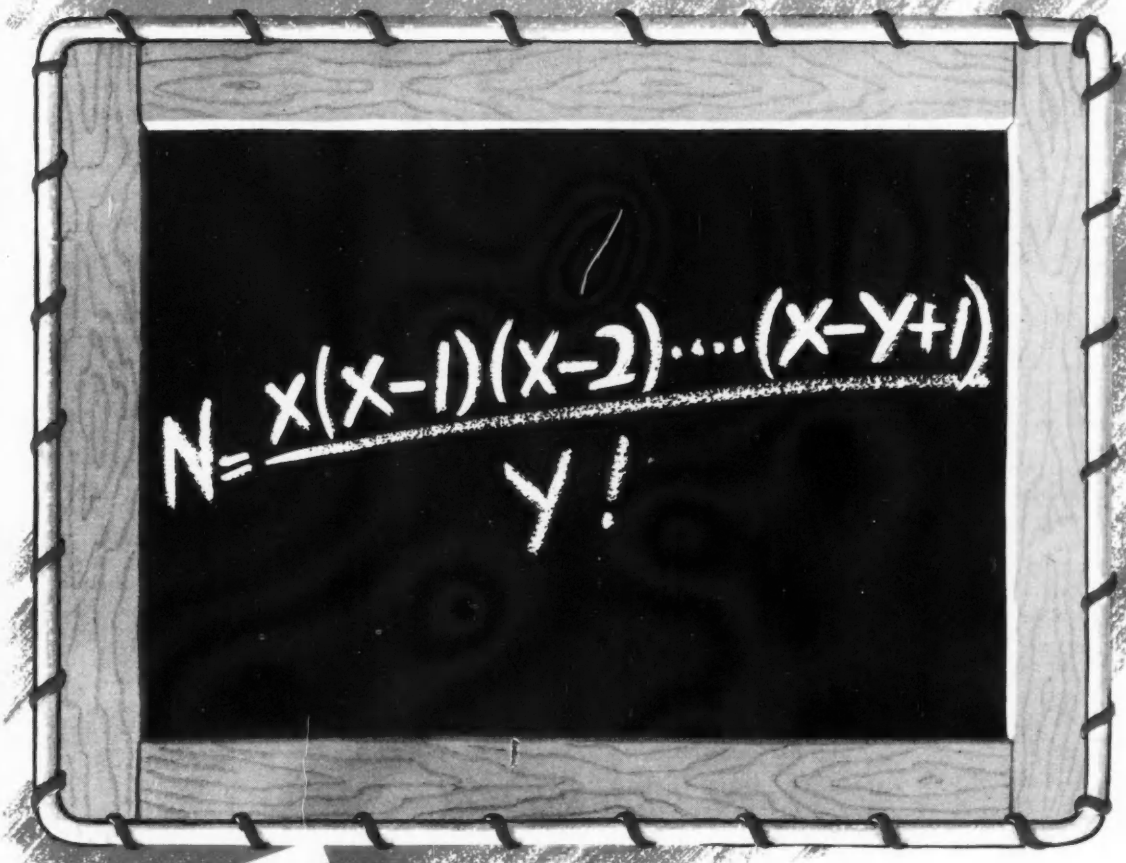
An Answer to your *MULTIPLE FIBRE* Problem...



DYESTUFFS • CHEMICALS • INTERMEDIATES

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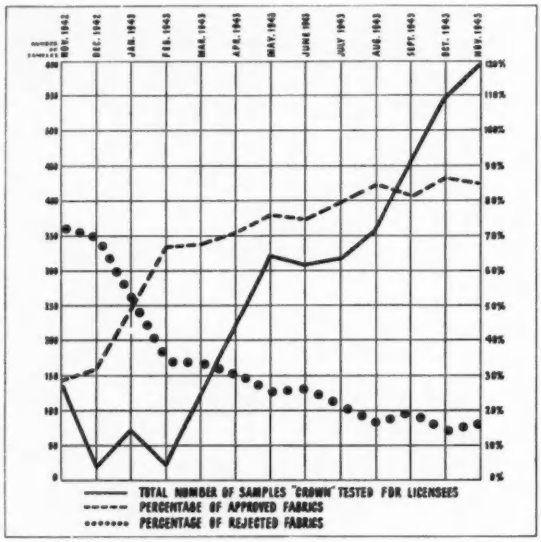
VAT DYES OF THE DOW CHEMICAL COMPANY

With this formula you can calculate the number of possible combinations of X fibers (natural and synthetic) taken Y at a time, that could be used in cloth construction . . . the answer will amaze you.

We know, of course, that no one will actually use this formula. Common sense, experience and the ultimate use of the fabric will eliminate many possible combinations. The ones that emerge, however, will offer more complicated dyeing problems than we have known in the past.

Plan today for tomorrow's dyeing problems . . . tell us your story . . . send us a portion of your sample pieces.

"CROWN"* TESTED PLAN'S SUCCESS STORY AT A GLANCE!



No greater tribute could be paid to the list of converters and finishers who are members of our licensee roster than the chart shown above.

For this statistical chart is worth a thousand words in describing the steady progress of the "Crown" Tested Plan.

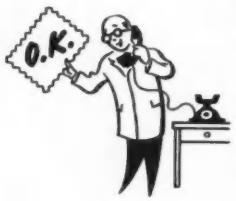
For example, Line 1 tells its own significant story. Check it in detail for yourself. Look at November, 1942—only a year ago this Fall. That month, on the introduction of the new "Crown" Tested Plan . . . 134 dye lots were tested against the requirements.

Now look at November, 1943 . . . 596 dye lots of fabrics were tested for "Crown" Tested licensees! Here is the best of proof that leading converters and finishers not only approve of the "Crown" Tested Plan in principle . . . but that they're *applying it in practice*. That they find it pays dividends.

Now check Line 2. This curve shows the *percentage* of dye lots approved under the "Crown" Tested Plan. Note its steady rise. Here is statistical assurance that "Crown" Tested requirements can—*and are*—being met on a practical basis, in better than 80% of the fabrics tested.

Line 3—showing the percentage of dye lots rejected monthly—serves to amplify the positive value of Line 2. For currently, only about 15% of dye lots of fabrics submitted for "Crown" Testing fail to match the minimum standards for consumer satisfaction.

Here is the final answer to all questions as to whether "Crown" Tested standards are too high to be met day in and day out by the industry at large.



Converters and finishers with the help of progressive dyestuff manufacturers have compiled the answer to the questions that met the new "Crown" Tested Plan's introduction a little more than a year ago. And the evidence continues to pile up—in ever increasing strength—month after month.

In the rayon fabrics going to market today . . . fabrics that have passed "Crown" Tested minimum requirements for consumer satisfaction . . . will come the ultimate proof of the value of the "Crown" Tested Plan, dedicated to the continuous improvement of rayon fabrics for the American Public.

"CROWN" TESTED RAYON FABRIC
TRADE MARK REG. U.S. PAT. OFF.

NEW INFORMATIVE LABELING

Consumer Satisfaction under the "Three Tag" System

"Crown" Tested Rayon Fabric

*Reg. U. S. Pat. Off.

This is a stabilized fabric. Tests predict it will not change visibly in color or in texture, nor in size more than 2%, if instructions are followed. Samples of every dye lot of this fabric have been tested for stability and strength, according to minimum requirements set and maintained by

AMERICAN VISCOSE CORPORATION

Producer of CROWN *Rayon Yarns and Staple Fibers*

Sales Offices: 350 Fifth Ave., N. Y. C. 1; Providence, R. I.; Charlotte, N. C.; Philadelphia, Pa.

Repel-O-Tex

SUPERIOR WATER REPELLENT

OFFICIAL U. S. NAVY PHOTOGRAPH

Protecting Navy uniforms against moisture and dampness is an added essential provision for keeping Navy personnel, at sea or ashore, shielded from the elements.

The American Textile Industry in cooperation with Navy experts are producing the world's finest uniforms and quite obviously included in their uniform specifications—water repellency.

In the development and production of Repel-O-Tex, Onyx Research has contributed another outstanding product of exceptional merit, which is proving of considerable value in making Navy uniform fabrics—water repellent.

onyx

If you have a water repellent problem consult Onyx Research. Your inquiries are solicited.

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Smart! Why?

Because it was skillfully designed —executed with the finest of craftsmanship? Yes . . . but that's only part of the story! Unless the material from which this ski suit was made had been properly processed, the suit never would have had the style appeal that sold it. That's why so many leading mills, converters, finishers and dyers have turned to Colgate-Palmolive-Peet for high-quality wetting, fulling, scouring and dispersing agents.

There is a C.P.P. soap or synthetic detergent for every fabric—for every processing problem. Ask your local Colgate-Palmolive-Peet representative for detailed information on the full line of C.P.P. processing agents made specially for the textile industry. Or, write to Industrial Department at Jersey City 2, N.J.

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BADGER FLAKES
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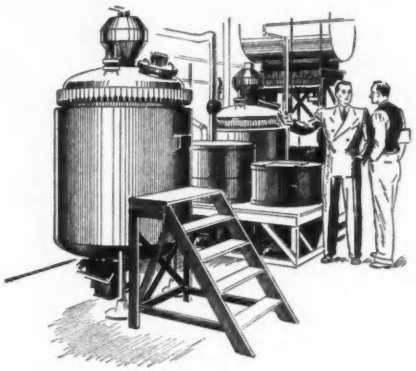
DON'T WASTE SOAP . . . vital materials needed to win the war are used in making soaps.

Trained Men to Give Practical Advice where Synthetic Organic Chemicals are Used



IN THE PLANT – Our technical representatives frequently can give advice on customer problems involving solvents, emulsifying agents, wetting agents, plasticizers, coupling agents, and chemical intermediates. They are thoroughly familiar with the properties, applications, and uses of the more than 160 chemicals we make.

IN THE LABORATORY – They can give you information on the many new chemicals we have announced for research study. And they can tell you about recent applications of older products that you may be using. These representatives are chemists and chemical engineers who have had experience in our research laboratories and understand research problems and techniques.

IN THE OFFICE – In your chemical purchasing problems as well, our representatives can be of service . . . advising on price, shipping, and priority regulations, the routing of orders, and the availability of chemicals we make, or their replacements. These men are located in all the major chemical-consuming cities throughout the country.

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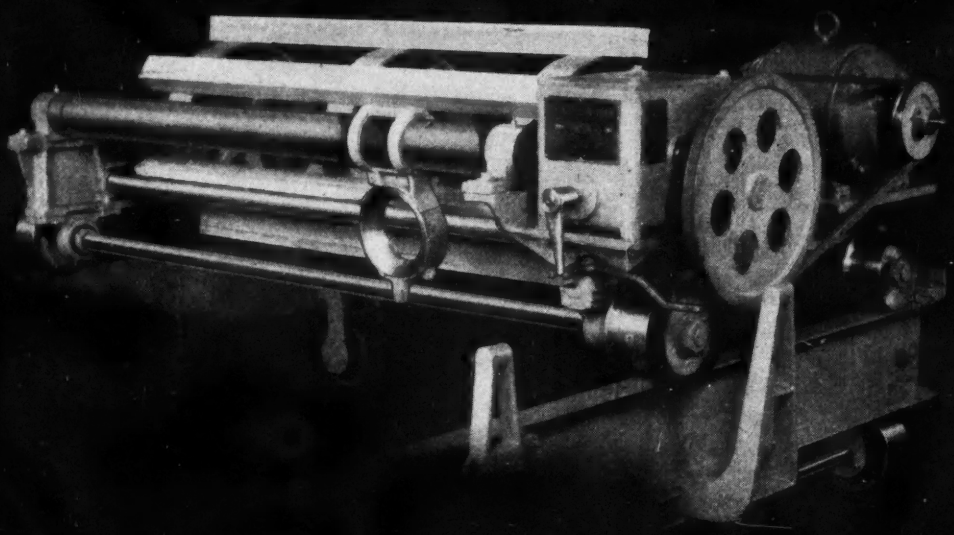

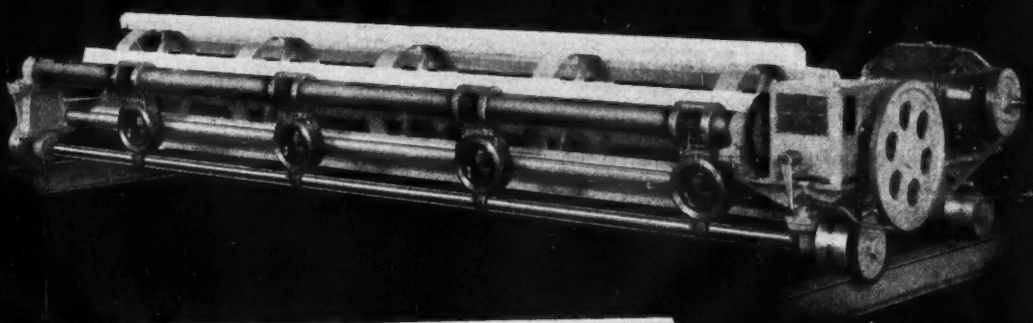

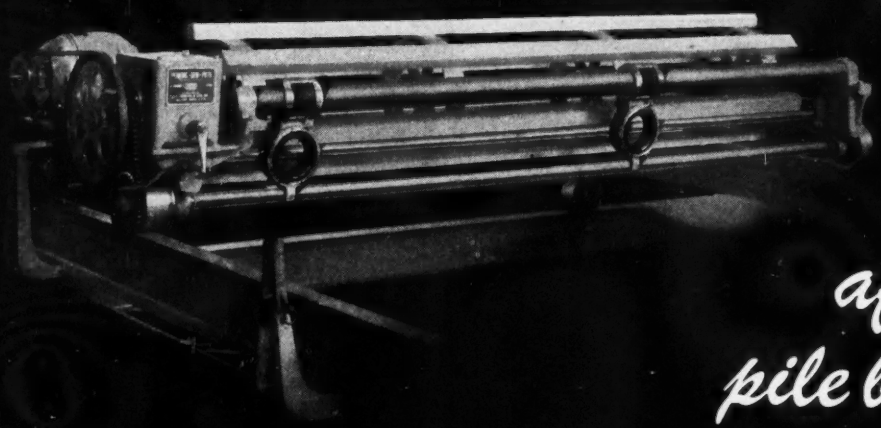

You cannot afford to pile by hand

B. F. PERKINS & SON, INC.

ENGINEERS AND MANUFACTURERS

HOLYOKE • • • MASSACHUSETTS

GENERAL DYESTUFF CORPORATION

Quality Dyestuffs

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A powerfully efficient oxidizing agent – easily controlled – that operates effectively over a wide range of conditions from highly acid to highly alkaline.

Sodium Chlorite does the job you want done – and only that!

In years an infant, in accomplishments a prodigy – Mathieson Sodium Chlorite has made vital contributions in manufacture and processing:

- oxidization of vat dyes in textile field.
- bleaching of cotton without danger of degradation.
- bleaching cellulose acetate – no saponification hazard.
- simultaneous scouring and bleaching of cotton-rayon mixtures.
- bleaching paper pulp to exceptional, high brightness with superior quality.
- refining and bleaching sugar and sugar melts at lower costs with increased recoveries.
- speeding the bleaching of waxes.

And now, Mathieson Sodium Chlorite wants new fields to conquer. For we compound the stimulus but you must fire the mold. So here it is – complete information is yours for the asking.

Mathieson Sodium Chlorite

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SODIUM CHLORITE PRODUCTS . . . CAUSTIC SODA . . . SODA ASH . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . AMMONIA, ANHYDROUS & AQUA . . . HTH PRODUCTS . . . FUSED ALKALI PRODUCTS . . . SYNTHETIC SALT CAKE . . . DRY ICE . . . CARBONIC GAS . . . SODIUM METHYLATE

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THAT WILL RAISE CIVILIAN TEXTILE STANDARDS AFTER VICTORY

AQUA-SEC* QM

WATER-REPELLENT FINISH

AQUA-SEC QM is the first new development of importance in wax emulsion, water repellents, since their introduction. America's standard water-repellent finish. Meeting all government requirements for water-repellency.

PURATIZED*

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MILDEW AND BACTERIA RESISTANT FINISH

Lasting mildew and bacteria-resistant finish. Recommended for fabrics which must meet bacteriostatic and fungistatic properties as specified by U. S. Government. Free of objectionable odors, non-toxic. **Manufactured by Gallowhur & Co., Inc.**

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WATER-REPELLENT PLUS MILDEW-RESISTANT FINISH

Aqua-Sec water-repellent plus Puratized mildew-resistant. Compounded so that approximately a 6% solution, based on 100% pick-up, will give a repellency rating of 90 or better, and will deposit .5% of Puratize on the fabric.

CEGLIN*

FINISH FOR TEXTILES

A durable cellulose finish...now adding strength and durability to mosquito nettings, shirtings, sheetings, and lace fabrics. Becomes so firmly anchored to each thread that it is fast even to kier boiling. **Manufactured by Sylvania Industrial Corp.**

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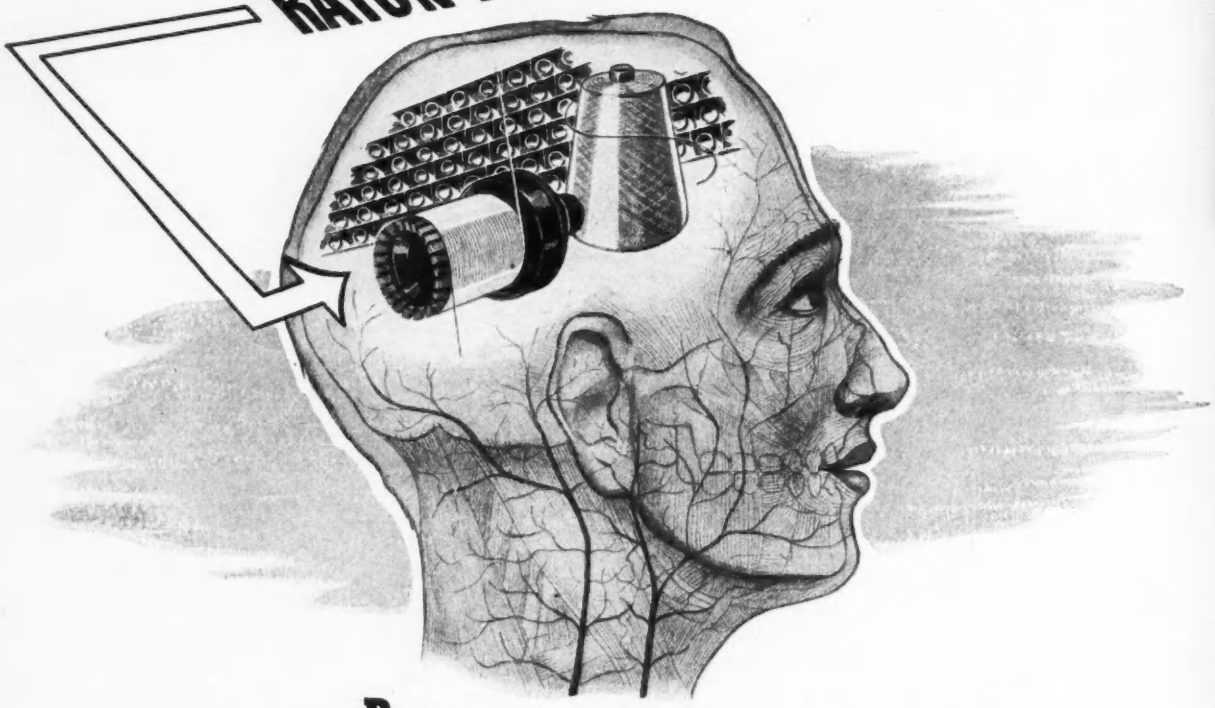
RAYON PROGRESS IS BORN HERE



Back of a man's mind, an idea is born. It may be for a carriage to run without horses—or for a message to be delivered without wires—or for rayon yarn to be produced "continuously", going through operation after operation as a single strand. Then come the years of experiment, of heart-breaking trial and error. We of Industrial know the problems our technicians faced, and defeated, in perfecting the "CONTINUOUS PROCESS."

No longer a concept in man's mind, today the "CONTINUOUS PROCESS" is very much a fact—and Industrial's great plants are turning out a yarn continuously, as a single strand. And this yarn is so uniform and knot-free that cloth can be woven from it with an absolute minimum of "down time" thereby increasing mill efficiency and producing a cloth that dyes perfectly and evenly, even in the difficult flat tones.

We're proud that ours is still a Company of youth and vision and energy providing an atmosphere in which new ideas, new ways, new thinking, can blossom into further textile progress.

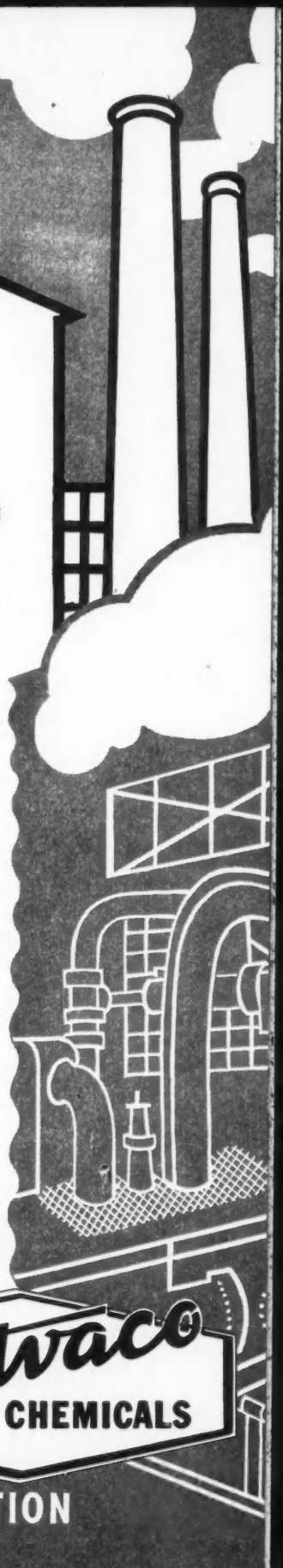
Industrial
RAYON CORPORATION
MAKERS OF
"CONTINUOUS PROCESS" RAYON YARN
AND Spun-lo KNIT UNDERWEAR CLOTH

*Reg. U. S. Pat. Off.

CLEVELAND, OHIO · *New York Office, 500 Fifth Ave.*

THESE ARE

Westvaco CHEMICALS



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Epsom Salts
Hydrated Lime
Hydrogen Peroxide
Quick Lime
Sodium Sulfide
Magnesol†

**Produced by Barium Products, Ltd.*

†Magnesol is a registered trade mark of the Westvaco Chlorine Products Corporation for a class of highly active magnesium silicates.

Westvaco CHEMICALS

WESTVACO CHLORINE PRODUCTS CORPORATION
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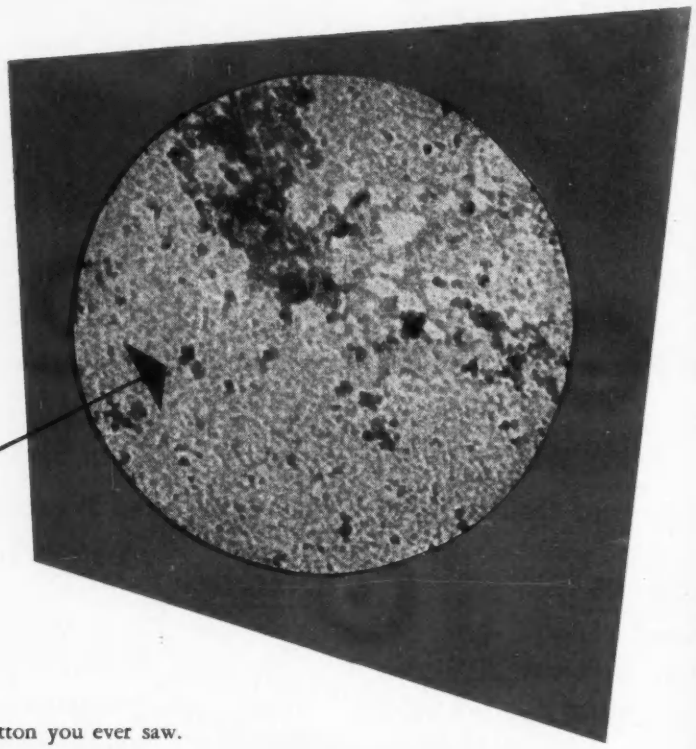
Chicago • Greenville, S. C. • Newark, Calif.

ever SEE a molecule?



THIS is the most intimate view of cotton you ever saw.

Many of the tiny particles you see here at 100,000 times their actual size, really measure about 1/200th of a micron, or 1/5,000,000th of an inch in width.

They are probably individual molecules, the first cellulose molecules ever photographed.

A few years ago micrographs of anything smaller than 1/10th of a micron, or 1/250,000th of an inch, were completely beyond the realm of possibility. Now objects as small as these molecular-size bits of cellulose are photographed almost as a matter of course with the electron microscope at Monsanto's Central Research Laboratories.

So what does this mean to a busy, practical textile man?

It means this:

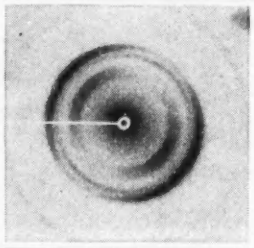
With new research tools like the electron microscope, the chemical and textile industries together are learning important new lessons about the fundamental nature of textile fibres — which lead, in turn, to important new lessons in how to produce *better* fabrics *cheaper*.

With specialists like the skilled and highly trained electron microscopist who took this micrograph to back them up, the practical textile technicians who direct Monsanto's technical service to textile customers are *better* equipped to *serve you* more effectively. MONSANTO CHEMICAL COMPANY.

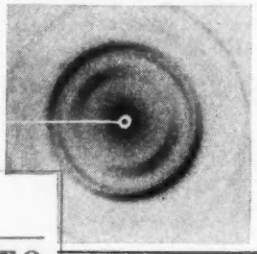
Divisions co-operating in Monsanto textile research and service: *Merrimac Division*, Boston, *Plastics Division*, Springfield, Mass., and *Organic* and *Phosphate Divisions*, St. Louis. Address inquiries to Merrimac Division.

The Textile
SERVING INDUSTRY
WHICH SERVES MANKIND

To get micrograph above, mature cotton fibres were soaked 15 hours in concentrated NCl at 0°C., washed, rubbed in mortar with distilled water, then a drop of suspension was evaporated on collodion membrane.



These X-ray diagrams of treated and untreated (below) fibres show substantially same degree of preferred orientation. Ordinary microscope revealed that fibres were still intact but swollen to about twice normal size.



When rubbed, however, treated fibres disappeared. Presumably there was enough degradation of the molecules to destroy mechanical strength but not enough to disintegrate the fundamental cellulose crystal lattice.

MONSANTO
CHEMICALS — PLASTICS

This "SMEAR CAMPAIGN" Saves Soldiers' Lives!

In the treatment of malaria, as in pneumonia, positive identification of the presence and the particular type of parasite is the most helpful first step to the cure. Only positive diagnosis of BOTH the presence and type of malaria is by blood test using the thick-drop technique . . . thick smears stained to reveal the particular parasite by its shape, size and pigmentation.

For this invaluable malaria pathology, NATIONAL GIEMSA'S STAIN is being used successfully on troops coming out of the malaria-infested areas.

So again, National, as an important producer of anti-malarial QUINACRINE and malaria diagnosing GIEMSA'S STAIN, is performing a noteworthy service in helping to reduce the human cost of reconquering the tropics.

NATIONAL ANILINE DIVISION

ALLIED CHEMICAL & DYE CORPORATION

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IF SOLUBILITY IS A PROBLEM IN PACKAGE DYEING, USE HOOKER SODIUM SULFIDE

Package dyeing of cotton yarn in an eight-to-one liquor ratio shows savings from 5 to 20% in dyestuffs, depending on the class of color and its degree of exhaustion. A substantial saving in auxiliaries is also possible.

But dyeing of sulphur colors, for instance, presents difficulties to the package dyer. Dyes sometimes contain dirt, or other insoluble matter; if the Sodium Sulfide used also contains impurities and suspended matter, solubility is a real problem.

Hooker Sodium Sulfide, which has established an exceptionally high standard of purity and uniformity, may be the answer to your problem. Made by a unique process developed by Hooker, it contains a minimum of impurities.

DATA ON SODIUM SULFIDE

Formula: Na_2S
Molecular Weight: 78.1
Solubility: gms/100 gms—
Water—
15.4 at 10°, 59.2 at 90°;
Alcohol—slightly soluble;
Ether—insoluble

HOOKER SPECIFICATIONS:

Light salmon-yellow colored solid in flake form, containing 60 to 62% Na_2S. Less than 1.5% NaCl. Less than 2.0% unspecified sodium salts. Less than 15 ppm Fe, average 10 ppm. Less than 1 ppm Cu, Ni, Cr, Mn, Pb, remainder water of crystallization; it melts at about 100° C. and gives a clear solution above 140° C.

You will find Hooker Sodium Sulfide particularly useful in the production of sulfur dyes, and in the application of these colors to textiles. A laboratory sample is available for test purposes. Write Dept. A1.

KEEP ON BACKING THE ATTACK: BUY BONDS

HOOKER ELECTROCHEMICAL COMPANY
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PERMA-FIX*

for direct colors

NEW! This unusually efficient compound fixes direct colors on cottons and rayons. It greatly reduces bleeding and crocking—produces a soft hand and can be used to replace fixing salts. PERMA-FIX does not separate or precipitate in the presence of salt.

We suggest your immediate investigation of this product.

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New England Representative: E. L. LEGG, P. O. Box 597, Providence, R. I.

*Reg. U. S. Pat. Off.

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For Bright Reds and Scarlets

PHARMASOL Scarlet RR Conc.
PHARMASOL Scarlet SNN
PHARMASOL Red GNBS, and
PHARMASOL Red RN

are the outstanding members of the group of azoic colors producing full and bright Reds and Scarlets of excellent fastness at a low cost.

PHARMASOLS are stabilized solutions, adjusted to the most practical concentration, which can be easily applied with a maximum of efficiency. As they do not decompose they overcome the problem of troublesome dissolving.

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For Pink Shades of Good Fastness

INDIGOSOL Pink IR EXT, and
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are two products in this soluble vat color group which are unexcelled for the production of pink shades of good fastness. They are unequalled, in the fast color group, for ease of application, clearness of tone and the solidity of color in any depth. They can be printed, padded, or dyed on any textile fibre.

All INDIGOSOLS are readily soluble, easily developed and economical to use.

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AMERICAN
DYESTUFF REPORTER

VOLUME 33 JANUARY 17, 1944 NUMBER 2

TALL OIL
for the Textile Industry

By R. HASTINGS

Industrial Chemical Sales Division,
West Virginia Pulp and Paper Co.

SINCE the textile industry consumes many tons of vegetable fats and oils annually, the industry as a whole is vitally concerned with the growing scarcity of these commodities. Tall Oil, a source of fatty acids with an estimated potential availability of 100,000 tons annually, is helping to relieve this shortage. In textile plants it finds applications for scouring wool, rayon, and cotton linters, for kier boiling of cotton, for degumming silk and for the depitching of rayon pulps. Tall Oil, when sulfonated has properties similar to turkey red oil, and as such is used as a textile wetting, softening, and lubricating agent. Metallic soaps of tall oil are useful in waterproofing and mildewproofing textile fabrics.

SUMMARY

Tall oil, a product of the alkaline paper pulp industry, has many applications in textile operations. The present paper briefly reviews the source and composition of tall oil, and describes how it may be converted into a soap for scouring wool, rayon, and cotton linters, for the kier boiling of cotton, for the degumming of silk and for the depitching of rayon pulps.

Tall oil sulfonates readily forming a product similar to the turkey red oil used by textile plants as a textile wetting, softening, and lubricating agent.

Metal soaps of tall oil are useful for waterproofing and mildewproofing textile fabrics.

SOURCE OF TALL OIL

Tall oil is the natural mixture, consisting primarily of fatty and rosin acids, recovered from pine wood in the alkaline paper pulp process. In this process pine wood chips from ½ to 1½ inches long and ⅛ to ¼ inch thick, are heated under pressure with caustic solutions. This treatment disintegrates the wood; the cellulose portion of the wood remains insoluble and forms the paper pulp. The remainder of the wood becomes soluble and forms what is commonly known in the paper industry as black liquor. The fatty and rosin acids of the pine wood are converted to soaps in this treatment and form a part of the black liquor.

In reclaiming chemicals from black liquor, the liquor is first concentrated by evaporation. As the black liquor becomes more concentrated, the soap becomes insoluble and floats to the surface. The soap is then separated from the black liquor by skimming. These skimmings, most commonly referred to as tall oil skimmings, are the raw material from which tall oil is derived.

Tall oil skimmings find a limited market, but owing to the high moisture content, about 35%, and an appreciable amount of occluded black liquor, most consumers prefer to buy the moisture free, lower-freight cost and purer tall oil.

By a process of acidification with mineral acids tall oil skimmings are converted to crude tall oil.

COMPOSITION OF TALL OIL

The tall oil thus obtained is a clear brown oil consisting of three classes of compounds: 1. fatty acids; 2. rosin acids; 3. non acids as sterols, higher alcohols, and other saponifiable matters. Little information of a positive nature is known concerning the identity of the individual compounds present in each class. On the fatty acid portion the best work indicates that only 18 carbon unsaturated fatty acids are present.

The term rosin acids is misleading in that it suggests that they are abietic acid, the principal constituent of ordinary rosin. While abietic acid is present in tall oil a substantial amount of these rosin acids are liquids at room temperatures, amply demonstrating the presence of acids other than abietic. Abietic acid is a solid melting at about 170°C.

The non acids of tall oil are usually present in amounts of less than 10 per cent of the total. With the exception of a few sterols which have been identified, no further information is available on the identity of the other individual compounds present. While these substances are unsaponifiable, they will not separate out of tall oil soap solutions no matter how dilute.

The relative amounts of these three groups of compounds vary widely depending on the species and age of the pine wood, on the prevailing climate, the season of the year, the greenness of the wood being pulped, and on many

other factors. Fortunately, however, manufacturers of tall oil are learning to control its composition as illustrated in Table 1, showing the range of analyses offered by the largest American producer of crude tall oil.

Crude tall oil can be refined by various processes to give a light colored oil of mild odor. Of the refining process vacuum distillation is the oldest and still the process most widely practiced on a commercial scale. At the present time there are only a few American producers of refined tall oil, and the supply is comparatively limited. Fortunately, in most cases little difference in chemical behavior is found between crude and refined tall oil, and the majority of consumers have been able to use either grade unless color and odor are of primary importance.

The range and analysis on the refined tall oil offered by a leading American producer is given in table 1.

TABLE 1
Range of Analyses for Crude and Refined Tall Oil

	Crude	*Refined*
PHYSICAL DATA		
Specific Gravity, 60°F/60°F	0.97–0.99	0.96–0.98
Pour Point, not over, °F	45	——
Viscosity, Saybolt Universal at 210°F—Seconds	95–120	50–70
Flash Point, °F	350–370	350–380
Fire Point, °F	410–430	410–430
Color	brown	
Lovibond using half column		
Yellow—not more than		70
Red—not more than		40
Moisture, less than, %	0.4	0.1
CHEMICAL DATA		
Acid Number	160–170	170–180
Saponification Number	165–175	170–185
Rosin Acids Number	80–90	63–71
Iodine Number (Wijs)	140–150	——
Ash, less than, %	0.4	0.1
ANALYSIS		
Fatty Acids, %	45–50	55–60
Rosin Acids, % (calculated as abietic)	42–48	34–38
Sterols, Higher Alcohols, etc., %	6–9	6–10

USES FOR TALL OIL

Uses for tall oil have been developed in many fields. Its fatty acid nature makes it useful in the manufacture of soaps and soap products, and as the emulsifying agent in a large number of soap base emulsified products. Metallic soaps of tall oil are used in waterproofing and mildewproofing of textile fabrics, in paint driers, and in lubricating greases. Sulfonated tall oil is used as a turkey red oil substitute in textile plants and in the manufacture of coated papers.

TEXTILE SCOURING WITH TALL OIL

Fatty acids, unlike fats and oils, saponify almost instantaneously upon the addition of alkali. The fatty acid character of tall oil has made it possible for many textile plants to reduce their soap costs by purchasing tall oil and converting it into a soap right in the plant.

The following directions are recommended for preparing a liquid soap of tall oil for textile scouring:

1. Add to a tank or other suitable container a weighed quantity of tall oil.
2. Fill tank about half full with clean water.
3. Heat the contents of the tank to about 170°F. with direct steam.
4. Hold this temperature a few minutes to allow the tall oil to become completely melted.
5. Shut steam off.
6. Add caustic soda solution, using the equivalent of one pound of flake caustic for each gallon (8 pounds) of tall oil added to the tank.
7. Turn steam on.
8. Fill tank to desired level with clean water.
9. Allow steam to pass through the solution several minutes to ensure uniformity of the contents.

It will be noted that in these directions the strength of the tall oil soap solution has been left to the individual consumer. For convenience in measuring out the soap solution, most textile mills prefer a soap strength of one or two pounds to a gallon of solution. To prepare soap solutions of these strengths one or two pounds of tall oil are added for each gallon capacity of the tank used. Tall oil soap solutions of these strengths will not gel when cooled to room temperature.

The caustic soda added in the above directions is consumed by the tall oil in forming the soap and the resulting soap solution will not contain appreciable amounts of free alkali. Because free alkali is no longer present, such tall oil soaps are no more harmful to textile fibers than other soaps used for textile scouring operations. Tall oil soap solutions, made as directed above do not differ in pH from soap solutions prepared using ordinary unbuilt soaps. Where the scouring operation requires the use of free alkali or soap builders, such as soda ash, they should be used with the tall oil soap. The amount of excess alkali or soap builder added should be the same as that required with other unbuilt soaps.

While the odor of crude tall oil is not considered pleasant, tall oil soap is readily removed from the scoured textile materials by rinsing and no residual odor remains after drying.

In common with the usual fat soaps, tall oil soaps react with the calcium and magnesium salts in hard water to form insoluble soaps. Insoluble soaps cause discoloration and staining of textile fabrics. Because of this textile mills using tall oil soap should check their water softening equipment at frequent intervals to see that the water used is actually of zero hardness.

In most cases textile mills are able to replace their entire soap requirements with tall oil soap. To test tall oil soaps, it is best to carry out the trial on as large a scale as possible, as laboratory size tests are not always reproduced in the plant. Where extreme caution is pre-

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JANUARY 17, 1944

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• CALENDAR •
OF COMING EVENTS

Meeting, Council, Chemists' Club, New York City, January 21, 1944.

Meeting, Research Committee, Chemists' Club, New York City, January 22, 1944.

Meeting, Rhode Island Section, Providence Engineering Society, 195 Angell St., Providence, R. I., January 28, 1944. Speaker: Dr. Anthony M. Schwartz, Alrose Chemical Co., "Substantivity and Its Role in Textile Processing." Meeting at 8:00 P.M. Dinner will be served at 6:15 P.M. at the Sheraton Hotel.

Meeting, Northern New England Section, Hotel Manger, Boston, Mass., January 28, 1944. Speaker: Dr. Walter S. Landis, American Cyanamid Co., "The Post-War Outlook for the American Chemical Industry."

Meeting, New York Section, Downtown Athletic Club, 19 West St., New York City, February 4, 1944. The program will consist of a symposium on Synthetic Fibers and Their Future Development. Speakers and subjects will be: Dr. Harold DeWitt Smith, A. M. Tenney Associates, "Acetate"; O. B. Bromley, Aralac, Inc., "Aralac"; C. K. Seid, American Bemberg Co., "Bemberg"; R. A. Ramsdell, Nylon Division, E. I. du Pont de Nemours & Co., Inc., "Nylon"; Dr. Frederic Bonnet, American Viscose Corp., "Viscose and Vinyon." Dinner at 7:00 P.M. Meeting at 8:00 P.M.

Meeting, Mid-West Section, Bismarck Hotel, Chicago, Ill., February 12, 1944. Annual Meeting and Election of Officers. Meeting at 3:30 P.M., Dinner at 7:30 P.M.

Meeting, Philadelphia Section, Hotel Philadelphian, Philadelphia, Pa., March 3, 1944.

Meeting, Piedmont Section, Poinsett Hotel, Greenville, S. C., March 25, 1944.

The Historical Background of the New STANDARDS FOR LIGHT FASTNESS*

W. H. CADY

IN order that we may fully appreciate the importance of Mr. Christison's blended wool standards [18] it has seemed desirable to review briefly the history of man's attempts to measure the fading of dyes; to examine one by one the various devices which have been utilized for this purpose, and later discarded in favor of something better; and particularly to follow the various attempts to control fading conditions by the use of dyed standards, of which Mr. Christison's are the very latest and (as many of us believe) the best so far proposed.

Although a great deal of attention is being paid in these modern times to the subject of light fading, and all dyes nowadays are carefully graded in respect to their fastness to light as a purely routine matter, let no one suppose that this separation of the sheep from the goats, figuratively speaking, is confined to our present age, or even to the synthetic dye era. Away back, during the reign of Louis XIV of France, his Minister of Finance undertook to regulate the use of dyes in that country, and instructed a man named d'Albo to prepare a code of regulations for dyers, which was published in 1672 under the title "General Instructions for the Dyeing of Wool in All Colors," etc. All dyers were divided into two classes, "Dyers of the Great Dye" and "Dyers of the Little Dye," which was another way of saying "Dyers of Fast Colors" and "Dyers of Fugitive Colors." Also all dyes were separated into two classes, fast and not fast, and the instructions specified what kind of dyes should be used on every kind of wool goods. Here, perhaps, was the prototype of our modern army and navy specifications. Dyers of the "Great Dye" were forbidden to use, or even to own, the "Little Dye." Although these regulations indicated a recognition of the importance of light fastness three centuries ago, the writer has failed to find in the literature any record of the methods used to determine which were the Great Dyes and which were the Little Dyes.

It is also related that in the sixteenth century, when logwood was first introduced into England, it was violently opposed by those dyers who were producing their blacks with indigo topped with madder on the ground that the logwood blacks were fugitive, indicating that a consciousness of light fastness was not confined to the French.

Aside from the work of Chevreul (to be referred to later) in the eighteen forties, investigations of the phenomena relating to the fading of dyes have been confined to the last sixty years. These investigations have usually proceeded along one or more of the following three lines: 1. Exposing the dyeings to a variable source of light (the sun) and trying to measure or control the actual amount of light employed; 2. Exposing the dyeings to a constant source of light (artificial); 3. Using standards for comparison.

A vast amount of information has been obtained in regard to sun fading, and various attempts have been made to standardize it, with little success. Many types of artificial light have been used in an effort to find a standard source of illumination similar to the sun in its spectral distribution and capable of exact reproduction. Much work has been done in trying to find suitable standards of fading, and this work is still proceeding. In the following paragraphs an attempt will be made to summarize the most important of these researches.

I. INVESTIGATIONS OF SUN FADING

Hummel [30] tells us that approximately 100 years ago Chevreul exposed a number of dyed colors (obviously made from natural dyes) to light in a vacuum, in dry and moist hydrogen and in dry and moist air, and found that light alone (without air or moisture) has very little fading action. He also made the observation that dyes are faster on some fibers than on others. Chevreul was probably ahead of his times, for there seems to be no record of further work along these lines for forty years. Perhaps the reason for this apparent lack of interest lies in the fact that there were only a few dyes available at that time, so that there was little choice in selecting dyes for a particular purpose. With the arrival of the synthetic dyes, following Perkin's synthesis of Mauve in 1856, the extreme fugitiveness of these new-comers was quickly noticeable and naturally stimulated interest in fading tests.

In 1891 Woscher,[41] continuing Chevreul's work, enumerated the causes of sun fading as follows: the action of light alone; atmospheric oxygen; atmospheric moisture; and certain acid gases in the air, such as carbon dioxide and sulfur dioxide; and also found that light in presence of air and moisture has an oxidizing action on dyes.

Berner [13] in 1892 formulated certain rules to govern exposures: 1. Always expose against another sample for comparison; 2. Always expose dyeings of equal depth: 3. Watch the progress of the fading. This last point was elaborated by Kischelt,[32] who observed that some dyes fade uniformly from beginning to end of the exposure; some

* Presented at meeting, Northern New England Section, November 19, 1943.

fade at first, then are stationary for a considerable time; some are unaffected for weeks, then fade rapidly. He emphasized the importance of making several exposures of each sample for different periods of time. Although these instructions were written a half century ago, they still hold good.

Herzfeld [29] reported in 1898 that the excessive moisture in the air near the coast made dyes fade more rapidly there than inland. Later Goodings,[25] in 1935, also emphasized the importance of humidity as a factor in influencing fading, and cited a case in England where the amount of fading which took place on one dyed sample at 90 per cent relative humidity was three times as great as that produced in the same time at 30 per cent relative humidity.

Brownlie [14] in 1902 found, like Chevreul, that no fading occurs in a vacuum, and proved that the same was true in completely dry air, nitrogen, hydrogen, carbon dioxide and sulfur dioxide. He stated that ammonia in the atmosphere increases the fading, and alcohol or pyridine still more.

A series of sun tests [32] was made in Germany in 1891, and again in 1892, in which all the known coloring matters were dyed on cotton and wool and exposed simultaneously. A similar investigation followed in England, where a committee of the Society of Dyers and Colourists,[31] headed by Thorpe and Hummel, between 1893 and 1898 tested the fastness to sunlight of a very large number of natural and synthetic dyes, on wool, cotton and silk, and classified the results, putting the colors into five groups according to fastness. All samples were exposed to 1, 2, 3, 7 and 11 units of light, each unit representing the time required to fade certain standard dyeings (identity unfortunately not revealed). The longest period of exposure was approximately one year.

It was early recognized that the sun as a fading unit is an extremely erratic instrument. The actinic rays which are responsible for the fading action vary constantly in their intensity, being affected by clouds, mist, various impurities in the atmosphere, the time of day and the time of the year. It was further objected that sun fading was too slow, particularly in winter. Samples exposed on different days could not be compared for fading unless there was some way of measuring and recording the amount of solar energy every day.

Following are some of the attempts to standardize the sun test. Scheurer [38] in 1908 and Dosne [22] in 1900 made use of the Bellani Actinometer, a device for measuring the heat of the sun's rays (by evaporating ether from a blackened bulb exposed to the sun, and measuring the amount evaporated in a given time). This method presupposes that the intensity of the heat rays of the sun is directly proportional to that of the chemical rays which produce fading, which is questionable. Other methods [15] which were proposed for measuring the amount of sunlight utilized in a given exposure were: 1. Exposing beside the sample a standard solution of potassium iodide and sulfuric acid and determining the amount of iodine liberated in a given time by the sun's energy; 2. Exposing a solution of potassium ferricyanide in a sealed tube and estimating the amount of ferric hydroxide precipitated. All methods of this sort are complicated and take no account of variations in the sun fading due to moisture and impurities in the atmosphere.

In 1923 Bancroft [12] suggested that sun fading could be put on a quantitative basis by measuring the foot candle hours of light causing the fading, using the barium high vacuum photo electric cell of the Case Research Laboratory and an automatic potentiometer curve-drawing recorder for making a continuous record of the light intensity. In order to try out this suggestion, twenty selected dyeings [11] were exposed on the roof of a building at the National Bureau of Standards, in several ways (north and south light; with and without glass; clear days only and cloudy days only; continuous and intermittent exposure). Each exposure was timed so that the total fading on the average was approximately the same in all cases. In every exposure the Case apparatus was set up beside the samples, to record the light intensity. The results, after being tabulated, indicated that the quantity of energy registered by the apparatus did not correspond to the amount of fading. For example, the energy recorded in the direct sun test, exposed only between the hours of 9 and 3, was five times as great as the energy recorded in the north light test run continuously.

Herzfeld [29] in 1898 recommended revolving the exposed samples so that they would always lie at a right angle to the sun's rays. He used a lens to concentrate the rays on a small surface, in order to speed up the fading.

It may be appropriate here to refer to the standard sun test [6] of the AATCC, based on a large amount of work conducted by the Light Committee, and published in the Year Books for the last ten years as an Official Method. The committee found that there is comparatively little variation in the fading by the sun between the hours of 9 a.m. and 3 p.m. (standard time) on sunny days from April 1 to October 1. This test is recommended for those who do not have the price of a Fade-Ometer and who are not in too much of a hurry, particularly in the winter time.

For those who are interested in electronics and like to experiment with the "electric eye" the writer suggests that the standard sun test might be made entirely automatic by placing the samples in a cabinet with a tight fitting cover which would be raised and lowered by a suitable mechanism operated by an electron tube, and would be so adjusted that the cover would automatically open when the sunlight reached a certain minimum intensity, and would close when the light fell below that minimum, as, for example when the sky became cloudy or the sun set. In this way the samples would always be exposed to light of approximately the same intensity. So far as the writer knows, this idea has not been tried. Perhaps someone will volunteer to try it.

II. ARTIFICIAL LIGHT SOURCES

For the last thirty years attempts have been made to substitute an artificial source of light for the sun. One of the first of these was by Mott[34] in 1915, who recommended the white flame arc, and claimed that it produced fading closely resembling that of the sun, and that 10 or 20 hours of exposure at a distance of 10 inches from the arc would equal 50 hours of June sunlight. This lamp had, however, the disadvantage of producing much heat, and the cost for current was considerable.

Persistent efforts[7, 16, 35] have been made to use the mercury quartz lamp by various investigators, in spite of its different spectral distribution and excessive amount of ultra-violet rays. One of the claims made for this type of lamp was that it was much more powerful than the sun, and would greatly reduce the time of fading. Harrison[28] showed in 1912 that the light of a high-power mercury lamp fades colors in a very different manner than sunlight. For example, he found that Cotton Yellow GI and Chrysophenine were much faster to sunlight than Auramine and Thioflavine S, while in the high-power lamp Auramine and Thioflavine were actually faster. Gordon,[26] Scheurer[39] and Flynn[24] also referred to the abnormal fadings produced by the mercury lamp, but Flynn found that by interposing a glass screen between the lamp and the samples, much of the ultra-violet light was filtered out, and the fading now corresponded quite closely with that of sunlight. This statement was later verified by the Light Committee of the AATCC.

Another lamp which was advocated (about 1935) as a sun substitute, particularly in Germany, was the Custers[21] gas-filled tungsten filament lamp of 750 watts. It was claimed that if the excess yellow light was filtered out by a copper sulfate cell and if the samples were exposed on a water-cooled metal slide, to absorb the terrific heat emitted by the lamp, fading was obtained closely resembling that of summer sunlight and in one-fiftieth of the time. Apparently this lamp is open to the same objection as all other high-power lamps so far as the quality of the fading is concerned. In this connection it may be well to refer to Appel's[10] paper on "The Fading of Dyeings in Radiation of Different Intensities," published in 1935, in which he demonstrated that the relative fastness to light of different dyeings when exposed to a particular intensity of radiation is not necessarily the same when the intensity is increased or decreased.

About 1920 the violet carbon arc[20, 26, 27] made its appearance as a fading lamp under the now well-known name of the "Fade-Ometer." It is unnecessary to describe this lamp, as it is in practically universal use in this country, and a similar lamp, known as the "Fugitometer,"[20] is equally well-known in England.

The Fade-Ometer has a number of advantages over the other lamps just mentioned. The intensity of the light emitted by the arc at a distance of 10 inches from the samples is only a little stronger than that of the sun in midsummer; thus, the abnormal results of the more powerful lamps are avoided. The quality of the fading is quite similar to that of the sun, although there are some exceptions. The principal defect in the present Fade-Ometer is a lack of uniformity in the fading between two identical lamps operating at the same voltage, and sometimes in the same lamp at different times or even on opposite sides at the same time. A practical method of calibrating Fade-Ometers is highly desirable, and the Light Committee has given the matter much thought.

III. STANDARDS

Owing to the variable character of sun fading, many investigators have recommended the use of standard dyeings as controls. As far back as 1893, as previously mentioned, certain standards[31] were being used in England. In 1898 Scheurer[37] was using for this purpose three depths of Indigo, light, medium and dark, dyed on cotton, representing three degrees of fastness. He also tried analyzing the standards after exposure, to determine the actual amount of Indigo destroyed by the light. Herzfeld[29] also used Indigo as a standard in 1898, as well as Turkey Red. In 1912 Krais[33] prepared test papers colored with Victoria Blue R. He found that the color of these papers faded uniformly in the sun from hour to hour until at the end of six hours it was completely gone. He suggested that these papers should be used as standards for measuring bleach hours. A similar test paper, dyed with Eosine, was proposed by Robson[36] in 1918. Scott[40] recommended in 1921 the use of Victoria Blue B dyed on silk as a standard for light tests on that fiber.

Meanwhile the Fastness Commission in Germany had for several years been working on a systematic scheme of fastness tests on cotton and wool, to include not only light but also washing, fulling, chlorine and other color-destroying agencies. The light tests were to be made in the sun with eight standards for cotton and eight for wool, covering the whole range of fastness from very poor to excellent. The first report of the Commission was in 1914,[9] and was followed by revisions at irregular intervals. Tests for silk were added in 1926,[23] and for viscose and acetate a little later. Subsequently the Commission decided[3] to have only one set of standards (on wool) for all fibers, since wool dyeings are the least affected by moisture in respect to their light fastness. The wool dyes proposed in 1932 were not completely satisfactory and have been somewhat modified since that time. The present status of the German standards is somewhat obscured by the war.

In England a committee of the Society of Dyers and Colourists, organized in 1927, spent several years in developing light standards, and published in 1934[19] two parallel series, one of seven red dyes and one of seven blue dyes, all on wool, graded in such a manner that each member of a series was approximately twice as fast as the preceding one. In 1940[8] an improved series was submitted, this time consisting of eight blue dyeings, also on wool. These latest standards correspond quite closely with the

German standards of the same period.

The Light Committee of the AATCC undertook in 1930-31 to prepare standards based on the early German proposals but with improvements. Six wool dyes[2] were tentatively selected, including four reds and two blues. Shortly thereafter, however, the 14 British and eight new German standards were announced, and it was decided to make careful tests of all of these, as well as the tentative American standards. These tests consumed another year, and after they were completed it was decided[5] to abandon the red and blue American standards and select a new series made up of the best blue dyeings in all of the series. There was a little difficulty in selecting a full set of eight dyes, or rather, dyeings which possessed the precise degrees of fastness so as to make a perfectly graded set from fugitive to fast; but the Light Committee decided[4] that four of the eight, Nos. 1, 3, 5 and 8, would give a sufficient range for practical purposes, and these are now the official standards of the AATCC (see the Year Book). The remaining four standards, after a little more refinement, were to be added later, but it now appears probable that the work which Mr. Christison has done with blended wools will result in an entirely new set of official standards in the near future. Perhaps it will also result in new British and German standards, too, in the better world which is around the corner.

This paper would be incomplete if it failed to mention the very elaborate light tests known as "Series IV" which were conducted by the Light Committee in 1926-27 at the National Bureau of Standards. A total of 1252 dyeings, on cotton, wool and silk, were exposed simultaneously under seven different conditions, the purpose being to compare fading with and without a glass cover, fading in north light and in direct sunlight, continuous and intermittent exposure, and identical exposures in two successive years, and also to compare all of these with an exposure in the Fade-Ometer. The results were summarized and reported in the DYESTUFF REPORTER in a monumental report[17] June 24, 1929, together with a table of all the dyes employed and their respective fastness. Lack of space prevents a further discussion of this report here.

In conclusion, it may not be out of order to call attention to the light tests required by some of the Government agencies in their specifications for fabrics for the armed services. For example, many of the specifications of the Philadelphia Quartermaster Depot read simply "Samples to be exposed for 10, 20 and 30 days," or merely "30 days." The well-known Federal Specification "CCC-T-191a" under "Fastness to Light" reads in part as follows: "The specimen is exposed continuously for 20 days . . . on a roof . . . in a cabinet covered with . . . glass." These specifications do not take into consideration the fact that "20 days" in summer is very different from "20 days" in winter. The writer once made a series of roof tests of a sulfur khaki, each for four weeks, during an entire year. After washing the exposed dyeings to remove dirt and chimney soot it was found that the samples exposed in summer were practically white, while those exposed in winter were only slightly faded. This recalls a story, said to be founded on fact but as the dye manufacturers would say, "without guarantee."

During World War I, an important finishing plant was dyeing large quantities of Sulfur O D for the army, and the chemist in charge was in the habit of exposing samples to the sun from time to time to show to the Government Inspector. On one occasion the Inspector criticized an exposure which had been made in June, when the sun was at its highest intensity, and told the chemist that the fastness of that lot was below par and that future lots must show an improvement. When he came around again in October, he was shown new fastness tests, this time made in September, when the sun had begun to decline. These tests were definitely less faded than the previous ones, although there had been no change in the formula. "Ah," said the Inspector, "That's better. Now see if you can't keep it like that in future."

Perhaps we should not criticize the U. S. Government. After all, Uncle Sam is the textile industry's best customer today, and "the customer is always right." Nevertheless, it *is* a little hard to understand some of these things.

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(*See discussion on page P37*)

NEW PROPOSED STANDARDS FOR LIGHT FASTNESS*

HUGH CHRISTISON

THE idea of light fastness standards is not new, and has been the object of work of many, both here and abroad. The present tendency toward standardization and consumer information has made either a standard fading unit or standards of fading increasingly important. A standard fading unit is probably the more desirable, but the complexity of lamp design, variation in electric current, temperature, humidity, control and other factors, will have to be solved before such a unit can be accepted as the primary standard. The electric arc fading lamp has been so useful that it is here to stay. Satisfactory standards to accompany these lamps are recognized as important.

Since most light fading experienced by the consumer is caused by sun or daylight, standards of varying fastness to light fading are desirable for comparison with sun or daylight effects.

The German and Swiss dye industry probably were the first to use dye fastness standards, grading their own products in steps, sometimes from one to eight. With the advent of the A.A.T.C.C. research program, we entered the field of light fastness in all its phases. The value of the work of William H. Cady and William D. Appel, who labored hardest, can hardly be over-estimated. Their ideal was, and is, a satisfactory international set of standards. It is with hesitancy that the proposed standards are presented in view of the work done and the practically international scope of the acceptance of the present dyeings described in our Yearbook.

Only at the insistence of other members is this scheme presented. The results of the idea are not perfect and are subject to just criticism, but some believe the suggested standards represent an improvement over the old. The idea is that instead of a different dye for each standard, only two dyes and two dyeings be used.

The first work along this line was to mix in the dye bath, the two dyes, in varying proportions, to obtain the different steps of fastness wanted. The results looked interesting, but were considered unusable because the fastest known chrome or acid dye for light fastness would not equal the fastness of vat dyes or the vat leuco esters.

It is true that vat dyeings are topped or bottomed with other colors, and it is theoretically possible to produce five or eight dyeings of equal number fastness steps in this way. This was tried and abandoned for the more easily controlled and reproducible proposal here presented.

Our idea is to make two separate slub dye wool dyeings, one fugitive, the other fast, and blend them mechanically in proportions to produce the wanted fastness steps. One of the desirable characteristics of standard light fastness dyeings is that they should be fast to water and washing, because samples left on the roof are subjected to rain and snow, and because of soot and dirt, it may be desirable to wash them.

The present standards are somewhat deficient in this respect. Another desirable, though controversial, point is that the dyeing should lose color without change of hue. This last perhaps no dyeing does perfectly, although Erio Chrome Azurole B, or C.I. No. 720, .4 per cent, which was chosen for the fugitive component, behaves quite well, and is, of course, quite fast to washing. The fast component was dyed using Algosol Blue AGG, or Indigosol Blue AGG, 3 per cent.

The combinations were made using algebraic percentage changes in the ratio of the two components. First, pads were made by first carding the two components for the pad material; six sets of these mats were sent to dye manufacturers, mill and school laboratories, for fading. Guided by those results, yarn was made from the blended components and sample cloth woven and finished. The cloth samples, in turn, have been distributed for fading and the results mounted for inspection.

This exhibit here (see illustration 1 showing arc fading and illustration 2 showing weather fading) shows the present English, German and American standards. You can see the graduated fading produced by 2½, 5, 10, 20, and 30 days on the roof, on one card, and 10, 20, 40, 80 and 160 hours under the arc light on the other card. You will notice the variation in both the hue and the color standards and the faded portions, which is not fatal, and I think you will notice that the graduation on the whole is very good, although neither Mr. Cady nor Mr. Appel, as I stated, are quite satisfied in that respect. Now, after they have been made, we can always say they should be made somewhat more or less fugitive.

This exhibit here (see illustrations 3 and 4) shows the

*Paper presented before Northern New England Section, Nov. 19th. This is an expansion of the original paper presented at the Intersectional Contest in New York, October 22nd.

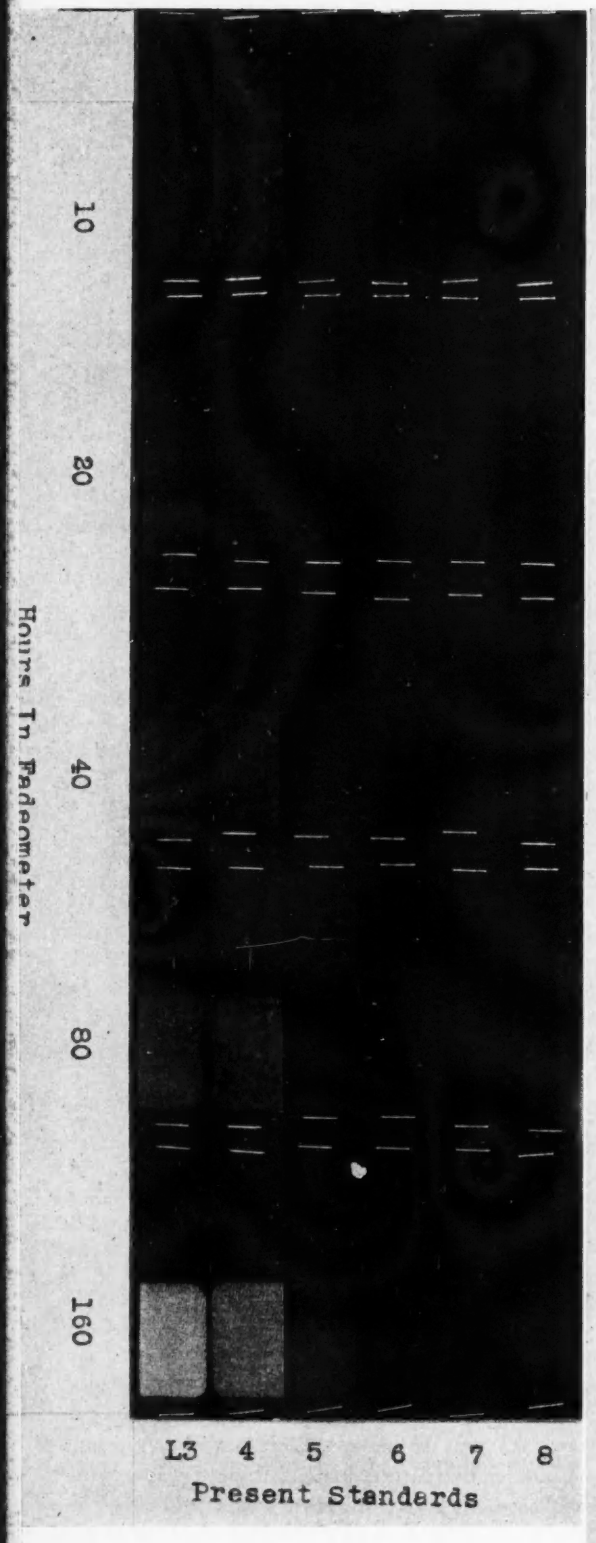


Fig. 1—Present standards exposed in Fade-Ometer for 10-20-40-80-160 hours. L1 and L2 have been omitted as being of no interest to Federal Trade Commission.

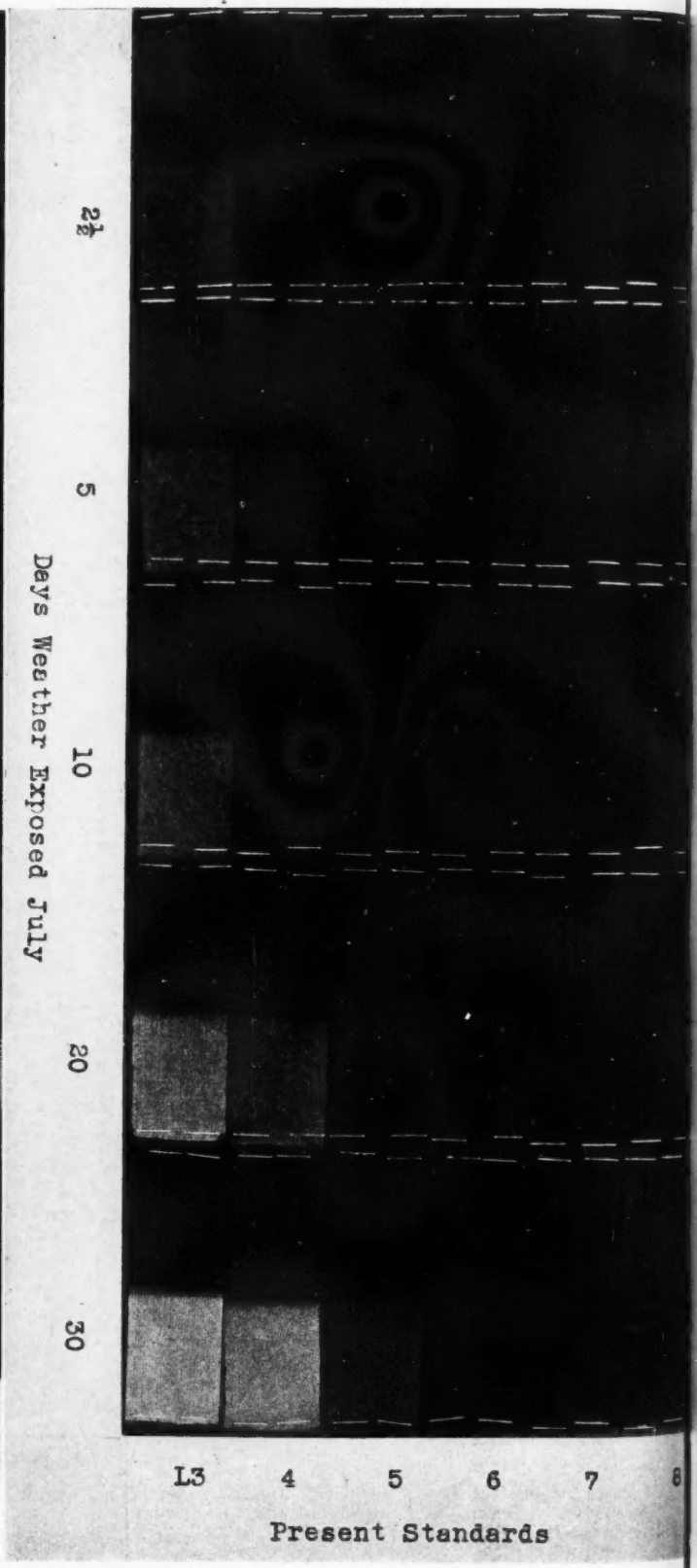


Fig. 2—Present standards exposed to July weather for 2½-5-10-20-30 da

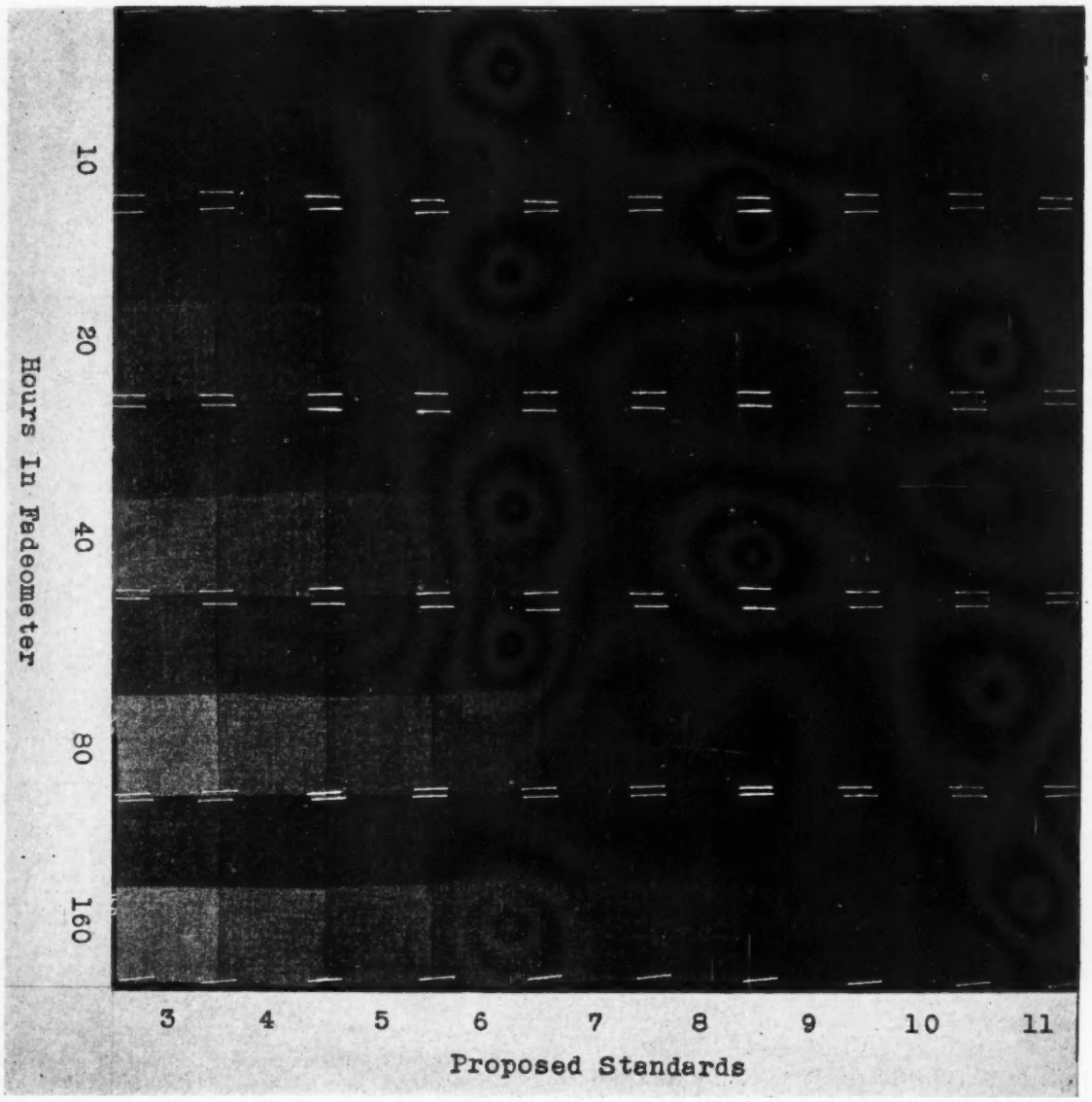


Fig. 3—Proposed standards exposed in Fade-Ometer for 10-20-40-80-160 hours. Numbers 4-5-7-9-10 selected to replace L3-L4-L5-L6-L7.

proposed standards also faded for 10, 20, 40, 80 and 160 hours and 10, 20, and 30 days by the weather.

I think it is rather unfortunate that the 10, 20, and 30 days were used because it should be 10, 20, and 40 days, to show a proper graduation, but the trade as a whole and the government has taken 10, 20, and 30 days as standard so it has become almost a universal practice.

One of the claims that we make for the proposed standards is good reproducibility. In making slubbing dyeings if we don't get the shade quite right, that is, if we get too heavy or too light, it doesn't bother us very much; we can make another dyeing either heavier or lighter and blend with it. It isn't as easy to rectify an off shade piece dye. Again, with the sub-dyed material, the cloth is usually quite level; it is not subject to being cloudy, shady, streaky or having other diseases that piece dyeing is heir to, so standards are fairly easy to reproduce. It is simple in that we only use two dyes and two dyeings. We have good fastness to water and washing, which is quite important for roof-testing. We can control the changes from one standard to the next very easily. If one standard is found to be a little fugitive, we can bring it up slightly, or we can go to the other direction.

We get a fairly good loss of color in fading without much change in hue. The method we use represents ordinary mill practice.

We can make any number of steps we want and can do it exactly. The method, however, does have some

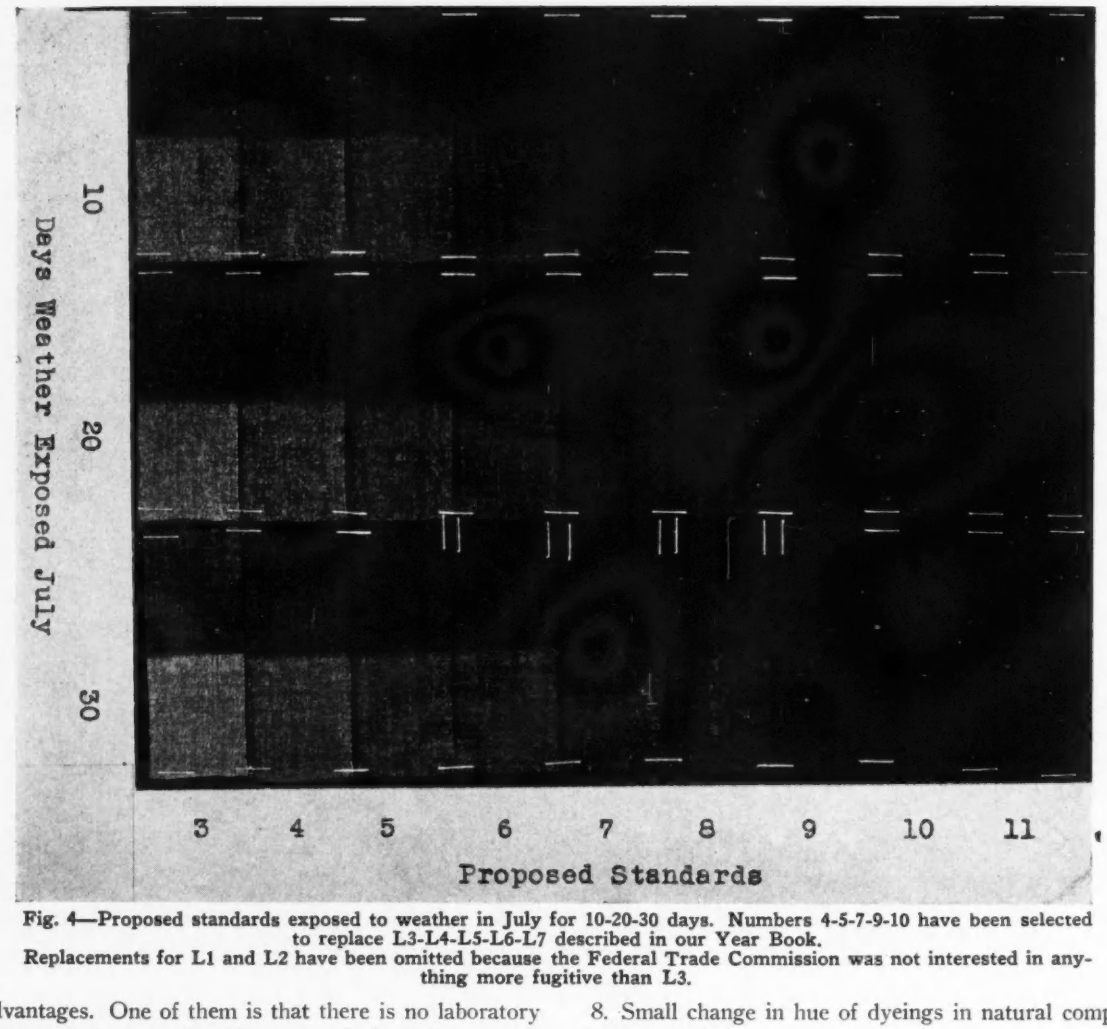


Fig. 4—Proposed standards exposed to weather in July for 10-20-30 days. Numbers 4-5-7-9-10 have been selected to replace L3-L4-L5-L6-L7 described in our Year Book.
Replacements for L1 and L2 have been omitted because the Federal Trade Commission was not interested in anything more fugitive than L3.

disadvantages. One of them is that there is no laboratory we know of that can do this work. It is strictly a mill proposition. And there is another defect, and that is the dyeings tend to fade to a mixy appearance. If you will examine these proposed standards closely, you will see there are faded and unfaded fibers in the exposed portions of the samples.

Let me give you concisely again what we claim the advantages of the proposal are:

1. Good reproducibility.
2. Simplicity (two dyes and two dyeings).
3. Good fastness to water and washing.
4. Gradual small change in hue from one standard to the next.
5. Fairly good loss without much change of hue, on fading.
6. The method used to dye the wool, blend, and make the cloth standards, represents ordinary mill trade procedure.
7. Exact and readily controlled steps of fastness in any number wanted.
8. Small change in hue of dyeings in natural compared with lamp light.

The disadvantages of the proposal are:

1. No laboratory known can make the proposed standards, this being mill work.
2. There is a tendency of the dyeings to fade to a mixy appearance, which is hardly noticeable except on overfading.

Now, I have made some Kodachrome slides that I should like to put on the screen and perhaps help some of you in the back of the room to see the thing a little better.

The first one (showing slide Fig. 2) shows the present standards. They represent essentially the English, German, and American present ideas. This particular slide illustrates the roof test of 2½, 5, 10, 20 and 30 days. It shows how nicely they are graded.

The next slide (Fig. 1) will show the same series except that these are arc light tests rather than roof tests, and they show the same characteristics.

This fast standard (L8) (indicating) is identical with the faster component we have chosen for our mixes.

This (Fig. 4) is a roof test. It represents 10, 20 and 30 days' exposure of the proposed standards.

The next slide (Fig. 3) will be that of the proposed standards, and you will notice the very gradual change in hue from the fugitive to the fast, and you will notice the very gradual steps in the fading characteristics.

This represents probably the most important of the exhibits, and is the arc light or fadeometer test. These represent the steps in which the Federal Trade Commission is interested, in connection with the labeling act, that is, 10, 24, 40, 80 and 160 hours.

Numbers 4, 5, 7, 9, 10 were selected to represent our present L3, L4, L5, L6, L7. The fugitive component was made using .4% Erio Chrome Azurole B. The faster using 3% Indigosol or Algosol Blue AGG.

The selected mixtures were made by blending:

	Fugitive	*Fast*
No. 4	40%	60%
5	28%	72%
7	14%	86%
9	7%	93%
10	5%	95%

This project has only been possible through friends and associates of mine, especially Bertil A. Ryberg, and the work of my former associate, Mitchell Glowienski. Roland Derby helped out a good deal by allowing us to use his sample card for the preliminary carding and mixing. He has quite a nice laboratory card that he made accessible and Mr. Spencer of our organization made the dyeings. Mr. Dushame of the American Woolen Company made about 500 pads for distribution to the trade. The preliminary work and the original concept are those of Miss Katherine Frederick.

I don't think there is anything more that I can say, and if anyone would like to ask questions, I would be very glad to answer them.

DISCUSSION

Mr. Grady: Our speaker has been specializing in blues this evening, and I wonder if in the spinning of the Indigosol dyed top if the breakage was any different from the spinning of the other type, that is, the breaking strength?

Mr. Christison: Mr. Grady would embarrass me.

Mr. Grady: I am only a spinner, you know.

Mr. Christison: I don't know. I don't think that there is any real difference; at least, I have never observed any difference, and I have never heard any comment one way or the other from our spinners. We have put through quite a production using chrome, acid, and leuco ester types, and I have never heard of any preference. But I know this, that if there is a condition with which the spinner can find fault, he will do it. But I have heard no complaint. Furthermore, if the Indigosols or Algosols were better in spinning, we would also hear from it. I have heard nothing.

Mr. Grady: You haven't heard of the Indigosol dyeings gumming up the gill boxes?

Mr. Christison: Listen, if the gill box was gummed up, you would hear about it.

Mr. Pierce: I would like to ask whether any investigation has been made as to the effect of the intensity of the ultra-violet ray in the light to which the dyeings have been exposed.

Mr. Christison: Mr. Cady is far more competent to answer that question than I am.

Mr. Cady: Well, it makes a big difference whether you are considering the near ultra-violet or the far; ordinary daylight has considerable near ultra-violet, but the mercury vapor lamp has a lot of far ultra-violet, and that is really what makes it so objectionable.

Mr. Pierce: My question was leading up to a further question, which was brought out regarding the standardization of the effect of exposure to light. In other words, we know by certain screens that you can shut out as much of the ultra-violet light as you choose to, and if, for example, you were to expose your dyeings in the arc light with a definite amount of ultra-violet penetrating that screen, wouldn't you have the destructive power of your light under control under any circumstances, no matter what kind of an arc light you have?

Mr. Cady: You mean you want to depend upon the ultra-violet light for fading?

Mr. Pierce: Well, I didn't know; that was the reason I put my question first. I don't know how much of the fading is due to the ultra-violet light. In other words, there is no question but that the ultra-violet light has a destructive power on the colored goods. How much that is, in relation to the other elements of the exposure, I don't know, and I was wondering whether that phase of the question had been investigated and whether you could say, for instance, that with 100 hours of exposure in arc light with a given amount of ultra-violet light going through that screen, there would be any difference in the rate of destruction of your color, depending upon whether more or less ultra-violet light was allowed to go through that screen?

Mr. Cady: Yes, I think I brought that out in my paper. If you have an excessive amount of the far ultra-violet light, you get a different quality of fading. I mentioned the fact that two direct dyes, Chrysophenine and Cotton Yellow G.I., have a light fastness pretty well up in the scale in sunlight. With the mercury vapor lamp, the basic Auramine and Thioflavine are faster than the direct yellows.

Mr. Pierce: Well, in other words, does that mean that the excessive amount of ultra-violet light is in the fadeometer?

Mr. Cady: Not the fadeometer; this was the mercury vapor lamp. In the fadeometer, we have some ultra-violet,

but not much more than in the sun; even the sun, without glass, has considerable ultra-violet light, and the fact that we get in the fadeometer fading which is similar to that of the sun is a pretty good indication that we do not have an excess of ultra-violet light. If we did, we wouldn't get the uniformity of fading.

Mr. Pierce: Would you say, Mr. Cady, that if you had a light screen that regulated the amount of ultra-violet light, which would be constant under all conditions, that you could possibly expect to get more uniform fading?

Mr. Cady: If you want fading which imitates the fading of the sun, which is what we are after, you would have to have no more ultra-violet light than in the sun.

Mr. Pierce: Wouldn't you get more ultra-violet in the winter than in the summer time?

Mr. Cady: I don't know that I have any information on that point. We have never noticed any appreciable difference in the quality of the fading between summer and winter. At one time, our Light Committee exposed a certain series of dyeings in the four quarters of the year, spring, summer, autumn and winter, as I recall it, and there was comparatively little difference between summer and winter. I don't know whether that answers your question or not; perhaps it does.

Mr. Deady: In your fadeometer, don't they have a certain amount of pigment in those globes that screen some of that ultra-violet light? I know they recommend changing the globe after fifteen hundred hours.

Mr. Cady: I think the reason for that is that the Corex Glass used in the globe, while originally quite transparent to the ultra-violet light from the arc, becomes changed chemically after considerable exposure, and that means that after a certain number of hours, it no longer transmits the same quality of light as it did originally. That is why they recommend changing.

Mr. Deady: Some time ago I proposed making a ribbon with stripes of various fastness in it. Of course, at that time, we were talking about those dyes that you mentioned first, the British and German ones, and it didn't seem very possible at that time to make a ribbon that would give you a fading that would be uniform.

With this combination that you have, the fading looks so uniform that wouldn't it be advisable to have it in a ribbon, say, of eight stripes, say, one-quarter of an inch or a little less of thickness, say a warp-float weave? Then you could cut off a section of the ribbon and expose it with the sample that you are testing. After the sample is faded, you could look and see how many stripes had gone on the ribbon and you could readily determine the number of hours' fading there was; one to eight, or whatever it was, and you could also watch that and it would be a handy thing to use instead of pieces of cloth.

Mr. Christison: I think the idea would be good if the fabric could be made smooth enough. I am a little bit afraid that Mr. Deady may be infected with some of the tricks that the trade is conversant with; that is, the smaller your sample the less you can see, and if you want to pretend that you have a good match, you cut the size of your sample down, and the match looks improved considerably. But I think in order to make the ribbon idea work that the stripes might have to be fairly wide. I think the idea has considerable merit, Mr. Deady, and it might be tried.

Mr. Deady: You get plenty on one-quarter of an inch strip; you can see all you want to.

Mr. Christison: Well, if you had the five standards, it would be excessively wide, would it not?

Mr. Deady: It would go up to eight, and it would be only two inches wide.

Mr. Christison: That is right.

Mr. Derby: Can Mr. Christison tells us when some of the cloth is going to be available for us in standards?

Mr. Christison: I hope in the very near future. The reason the cloth isn't ready now is that we are making a test to improve it. But the tests have not been very successful. At least, we haven't anything better than we have to show you tonight.

Mr. Derby: I think it would be a great help if we could have some of them. It may not be perfect to us, but perhaps we could find out what was wrong with it, if it could be made available through the Association or however you wanted to do it.

MEETING, RHODE ISLAND SECTION

THE next meeting of the Rhode Island Section will be held at 8 P. M. on January 28th at the Providence Engineering Society, 195 Angell Street, Providence, R. I. The speaker will be Dr. Anthony M. Schwartz, Alrose Chemical Co., who will speak on "Substantivity and Its Role in Textile Processing." A dinner, preceding the meeting, will be held at the Sheraton Hotel at 6:15.

MEMBERSHIP APPLICATIONS

Corporate

Althouse Chemical Co.
American Finishing Co.
Cleaver-Brooks Co.
Dyersburg Cotton Products, Inc.
Globe Dye Works Co.
Magnet Mills, Inc.
May, McEwen Kaiser Co.
F. H. Ross & Co.
S. & M. Dye Works
Springfield Woolen Mills Co.
Tennessee Eastman Corporation
Virginia Maid Hosiery Mills
Wayne Knitting Mills

Senior

D. K. Alpern—Technical Director, Freydberg Bros.-Strauss, Inc., Stamford, Conn. Sponsors: R. W. Joerger, H. C. Selya.

Cornelius Anthony Alt—Head, War Product Development, Fabrikoid Div. E. I. duPont de Nemours & Co., Inc., New York, N. Y. Sponsors: L. S. Little, R. S. Lunt.

Raymond Kenneth Andrew—Chief Chemist, U. S. Oil Co., Providence, R. I. Sponsors: A. R. Fletcher, H. G. Macdonald.

Louis D. Barta, Jr.—Chemist, Borne Scrymser Co., Elizabeth, N. J. Sponsors: E. H. Schmidt, N. A. Johnson.

George J. Beck—Vice President, Grover-Ferguson Co., Inc., Philadelphia, Pa. Sponsors: J. H. Culver, E. W. Brenner.

Thomas Bernaski—Boss Dyer, Kaback Piece Dye Works, Brooklyn, N. Y. Sponsors: A. Malick, O. F. Andersson.

Robert Buchanan—Dyeing Supt., London Hosiery Mills, Ltd., London, Ont., Canada. Sponsors: L. A. Olney, H. C. Chapin.

Eric William Camp—Resident Manager, National Aniline Div., Allied Chemical & Dye Corp., Chicago, Ill. Sponsors: F. J. Acker, E. J. Sindt.

William C. Carn—Overseer of Dyeing & Bleaching, Riverside Mills, Inc., Augusta, Ga. Sponsor: J. J. Egbert.

Vincent Chmielniski—Technical Advisor & Consulting Chemist, New York, N. Y. Sponsors: O. W. Clark, W. H. Watkins.

Andrew E. Collins—General Manager & Treasurer, Empire Piece Dyeing & Finishing Co., Paterson, N. J. Sponsors: W. A. Mierop, A. Malick.

James K. Coyne—President, George S. Coyne Chemical Co., Philadelphia, Pa. Sponsors: J. P. Conaway, R. M. Ritter.

John P. D'Amico—Manager, Gsell Textile Screen Printing Corp., New York, N. Y. Sponsors: R. Kritzer, J. Lagazio.

Ralph A. Darsey—Overseer of Dyeing & Bleaching, Lowell Bleachery South, Griffin, Ga. Sponsors: G. E. Frick, J. P. Harrison.

Thomas Glenn Dulin—Bleacher & Dyer, Lowell Bleachery South Griffin, Ga. Sponsors: L. L. Baker, J. F. Armstrong.

James Kenneth Edens—Dyer, Russell Mfg. Co., Alexander City, Ala. Sponsors: J. C. Farrow, L. L. Baker.

John L. Fawcett—Textile Inspection Officer, Naval Clothing Depot, Brooklyn, N. Y. Sponsors: L. S. Little, P. J. Kennedy.

Stuart Otho Fiedler—Research Supervisor, Textiles, Quaker Chemical Products Corp., Conshohocken, Pa. Sponsors: R. Zametkin, H. N. Kopple.

Irving B. Frost—Overseer of Dyeing, Arkwright Corp. Fall River, Mass. Sponsors: R. R. Farwell, R. C. Patton.

Wilfred John Fullerton—Executive, Chairman of Research & Development, Riverside & Dan River Cotton Mills, New York, N. Y. Sponsors: E. J. Driscoll, N. A. Johnson.

Walter James Gale—Chemist & Dyer, Globe Dye Works Co., Philadelphia, Pa. Sponsors: M. E. Haines, F. V. Traut.

Edwin S. Garverich—Research Chemist, Pennsylvania Salt Mfg. Co., Philadelphia, Pa. Sponsors: J. P. Conaway, R. M. Ritter.

Glenn Ingram Geddes—Boss Dyer, Cohoes Dyeing & Finishing Co., Cohoes, N. Y. Sponsors: J. Colman, J. A. Waring.

James A. Grundy—Chief of Research Dept., John Bromley & Sons, Inc., Philadelphia, Pa. Sponsors: B. C. Bond, H. F. Hoffmann.

Alfred A. Guidotti—Designer, Atlanta Woolen Mills, Atlanta, Ga. Sponsors: J. C. Robertson, J. C. Sheehan.

Otto F. Habel—Colorist, General Dyestuff Corp., New York, N. Y. Sponsors: C. Z. Draves, J. R. Bonnar.

Frederick R. Haigh—Chemist, Botany Worsted Mills, Passaic, N. J. Sponsors: T. F. Malloy, P. M. Otto.

W. Russell Harris, Jr.—Sales & Technical Service, National Milling & Chemical Co., Philadelphia, Pa. Sponsors: H. C. Brooke, L. M. Rosenberger.

James A. Heintzelman—Head Dyer, Seyer Silk Dyeing & Finishing Co., Haledon, N. J. Sponsors: A. Malick, T. F. O'Brien.

Henri Heymans—Treasurer, Hendor Mills, Inc., 26 Piercy St., Paterson, N. J. Sponsors: T. F. O'Brien, J. E. Meili.

Robert H. Hundley, Jr.—Dyer, Rosemary Mfg. Co., Roanoke Rapids, N. C. Sponsor: W. L. Barker.

Wm. Franklin Jeffrey—Hosiery Dyer, Murray Hosiery Mills, Inc., Murray, Ky. Sponsors: L. Hoehn, Jr., B. H. Sharman.

Norman E. Johnson—Supt. of Printing, Pocono Textile Prints, East Stroudsburg, Pa. Sponsors: G. N. Bond, Jr., R. Robertson.

Thomas M. Kelley—Supt. of Dyeing & Finishing, Thomas Taylor & Sons, Hudson, Mass. Sponsors: H. C. Selya, R. W. Joerger.

Robert M. Kennedy—2nd Lt., Technician, Depot of Supplies, Marine Corps, Philadelphia, Pa. Sponsors: W. G. Chace, H. C. Chapin.

C. Irving Lakey—Salesman & Demonstrator, Jacques Wolf & Co., Passaic, N. J. Sponsors: J. E. Buonanno, D. C. Hardman.

Theodore R. Lockwood—Director, Research Div., Earnshaw Knitting Co., Newton, Mass. Sponsors: H. P. Selya, F. A. Beevers.

Frank Allen Lucy—Chemist, Pennsylvania Salt Mfg. Co.,

Philadelphia, Pa. Sponsors: J. P. Conaway, R. M. Ritter.

John G. Lukash—Research Chemist, H. Kohnstamm & Co., New York, N. Y. Sponsors: J. W. Scheuerman, H. F. Lawton.

William A. Macfarlane—Vice President, Arthur Kahn & Co., Inc., New York, N. Y. Sponsors: L. S. Little, E. J. Driscoll.

Clinton William MacMullen—Technical Director, Cowles Detergent Co., Syracuse, N. Y. Sponsors: S. N. Glarum, J. W. Stallings.

David F. Mason—Research Chemist, Southern Dyestuff Corp., Charlotte, N. C. Sponsors: J. L. Crist, L. G. Atkins.

Alfred F. Mauldin—Dyer, Hudson Hosiery Mills, Charlotte, N. C. Sponsors: W. L. Barker, C. H. Schepmoes.

John B. McKelvey—Textile Dept., Emery Industries, Inc., St. Bernard, Ohio. Sponsors: N. A. Ruston, E. G. Hibarger.

Alice Moore—Executive Secretary-Treasurer, National Association of Finishers of Textile Fabrics, New York, N. Y. Sponsor: B. S. Bronner.

Wesley G. Morgan—Salesman, E. I. duPont de Nemours & Co., Inc., Atlanta, Ga. Sponsors: R. W. Thatcher, L. L. Baker.

Clifford A. Nangle—Textile Chemist & Dyer, Aralac, Inc., Taftville, Conn. Sponsors: D. G. Carmichael, H. V. King.

Henry Patrick—Chemist & Mercerizer, American Yarn Processing Co., Mt. Holly, N. C. Sponsors: A. H. Gaede, T. R. Smith.

Arthur H. Razee—Tech. Service Dept., Rumford Chemical Works, Rumford, R. I. Sponsors: R. W. Joerger, I. G. Loxley.

Fritz Otto Robitschek—Chemist, Marietta Dyestuffs Co., Marietta, Ohio. Sponsors: H. L. Lobsenz, L. Galloway.

Fred M. Rosenberger—Supt., manufacture of soaps and alkalies, National Milling & Chemical Co., Philadelphia, Pa. Sponsors: H. C. Brooke, L. M. Rosenberger.

Stephen G. Ruffenach—Dyer, Ming Toy Dyeing Co., Paterson, N. J. Sponsors: T. F. O'Brien, A. Malick.

Walter A. Sargent—Instructor of Textiles, Board of Education, Passaic, N. J. Sponsors: C. H. Brubaker, R. H. Drukker.

W. T. Schilling—Foreman of Cotton & Woolen Mill, Virginia State Penitentiary, Richmond, Va. Sponsor: W. L. Barker.

Thomas E. Shine—Research & Tech. Sales Service, W. C. Hardesty Co., Dover, Ohio. Sponsors: B. L. Hathorne, N. A. Johnson.

Robert Olin Simmons—Supt. of Dyeing, Pepperell Mfg. Co., Lindale, Ga. Sponsors: L. L. Baker, H. G. Smith.

Seth C. Smith—Foreman of Mercerizing, Dixie Mercerizing Co., Chattanooga, Tenn. Sponsors: C. J. Horne, F. F. Myers.

Alfred W. Spencer—Dyer, Bradford Dyeing Association, Bradford, R. I. Sponsors: E. J. Chornyei, D. R. Meikle.

John George Stass—Chief of Testing, Better Fabrics Testing Bureau, New York, N. Y. Sponsors: L. E. Rossiter, H. F. Leupold.

Herman L. Steen—Printing Technician & Demonstrator, Geigy Co., Inc. Sponsors: V. Froelicher, D. P. Knowland.

Walter J. Sullivan—Technical Salesman, E. I. duPont de Nemours & Co., Inc., Boston, Mass. Sponsors: G. O. Linberg, W. W. Pennock.

Harold C. Sydney—Executive, Providence Textile Chemical Co., Providence, R. I. Sponsors: H. D. Grimes, J. F. McCoy.

Carl I. Taber—Manager, Acetate Fabric Development Dept., E. I. duPont de Nemours & Co., Inc., New York, N. Y. Sponsors: L. S. Little, E. J. Driscoll.

Nathaniel R. Talarico—Dyer & Chemist, Crown Hat Body Corp. Sponsors: M. Lasher, W. Ferrazano.

Walter E. Thompson, Jr.—Chief Chemist, Hemingway & Barlett Mfg. Co., Watertown, Conn. Sponsors: E. Young, A. J. Bisbee.

Colton M. Tuttle—Asst. Chemist, Standard Bleachery & Printing Co., Carlton Hill, N. J. Sponsors: C. H. Brubaker, R. H. Drukker.

James William White—Textile Chemist, Glen Raven Cotton Mills, Glen Raven, N. C. Sponsors: H. B. Dixon, J. H. Stradley.

William C. Wilcoxson—Technical Representative, General Dyestuff Corp., Charlotte, N. C. Sponsors: E. M. G. Schroder, J. P. Harrison.

John C. Willson, Jr.—Chemist & Colorist, Pocono Textile Prints, East Stroudsburg, Pa. Sponsors: G. N. Bond, Jr., R. Robertson.

George E. Wilson—President & Gen. Mgr., G. E. Wilson Co., Providence, R. I. Sponsors: E. J. Allard, H. J. Daigneault.

John F. Yerick—Foreman of Dyeing & Bleaching, High Rock Knitting Co., Philmont, N. Y. Sponsors: C. D. Ehrengart, L. P. Brick.

Junior

Jack A. Adams—Sales Engineer, Calgon, Inc., Philadelphia, Pa. Sponsors: G. C. Parr, B. C. Bond.

Matthew J. Babey—Colorist, Calco Chemical Div., American Cyanamid Co., Bound Brook, N. J. Sponsors: W. H. Watkins, H. E. Millson.

Robert Irving Bragdon—Chief Chemist, Marden-Wild Corp., Somerville, Mass. Sponsors: H. Robinette, Jr., G. Cohen.

Rogers B. Finch—Officer in charge, Textile Products Research, Quartermaster Depot, Jeffersonville, Ind. Sponsors: E. C. Bertolet, J. R. Redmond.

Morris Kenigsberg—Chemist, General Dyestuff Corp., New York, N. Y. Sponsors: C. Z. Draves, H. E. Hager.

John Kuszko—Laboratory Technician, Forstmann Woolen Co., Passaic, N. J. Sponsors: W. Bergen, C. Monego.

Dorothy M. Lindsley—Lecturer on Textile Chemistry, University of Toronto, Toronto, Canada. Sponsors: A. C. Goodings, J. S. Roberts.

Walter Mannheimer—Mannheimer Chemical Co., New York, N. Y. Sponsors: H. P. Bauman, I. Lovit.

Adrienne Merkel—In charge of Testing Laboratory, Abraham & Straus, Inc., Brooklyn, N. Y. Sponsors: M. L. Chandross, M. A. Falcone.

George R. Nietzel—Laboratory Asst., General Dyestuff Corp., New York, N. Y. Sponsors: C. Z. Draves, J. R. Bonnar.

Sara Pinsky—Textile Technician, Fashion Frocks, Inc., Cincinnati, Ohio. Sponsors: B. S. Bronner, M. D. Reeser.

William A. Puig—Textile Chemist, Woonsocket Falls Mill, Woonsocket, R. I. Sponsors: E. A. Whalen, C. E. Bergamini.

William D. Scott, Jr.—Asst. Dyer, Blue Ridge Textile Co., Bangor, Pa. Sponsors: A. A. Caddell, J. S. Unterweiser.

Associate

Arthur H. Austin—General Manager, Ox Color Works, New York, N. Y.

Gabriel Bosschieter—Research Associate, Netherlands Economic Mission, Washington, D. C.

John C. Bradley—Manager, General Chemical Co., Charlotte, N. C. Sponsor: W. L. Barker.

Ervin R. Geib—Arc Dept. Manager, Carbon Sales Div., National Carbon Co., Cleveland, Ohio.

Charles Young Hall, Jr.—Supt., Georgia Mfg. Co., Columbus, Ga.

Morton A. Hutchins—Chemist, Plastics Research Lab., E. I. duPont de Nemours & Co., Inc., Arlington, N. J.

Ely Kogos—Editor, Apparel Manufacturer Magazine, New York, N. Y.

Edward T. Pickard—Secretary & Asst. Treas., Textile Foundation, National Bureau of Standards, Washington, D. C.

Arthur H. Sanford—Manager, Naval Stores Dept., Hercules Powder Co., Boston, Mass.

Elgin C. Swackhammer—Manager, Merchants Chemical Co., Milwaukee, Wisc.

L. Frank Wagner—Chief Chemist, Glidden Co., Reading, Pa.

Jacques Jacob Whitfield—Technical Salesman, Warwick Chemical Co., New York, N. Y.

Edith L. Wile—Textile Chemist, Pacific Mills, East Newark, N. J.

Student

John M. Culp, Jr.—North Carolina State College. Sponsor: A. H. Grimshaw.

Applications for transfer to Senior membership—W. Z. Leaphart, Robert B. Lueg.

MEETING, SOUTH CENTRAL SECTION

THE December meeting of the South Central Section was held at the Read House in Chattanooga, Tennessee, Friday, December 17, 1943.

There were 50 visitors and members present.

J. A. Crumley read the paper on, "Processing of Acetate Rayon Hosiery," that was presented recently in the Intersectional Contest in New York. The paper was discussed at length by the members.

The election of officers for 1944 was held and the following were elected:

Chairman—Homer Whelchel, Central Processing Co., Chattanooga, Tennessee.

Vice-Chairman—J. A. Crumley, Hosiery Processing Co., Rossville, Georgia.

Secretary—R. W. Freeze, American Aniline Products Co., 2202 Chamberlain Ave., Chattanooga, Tennessee.

Treasurer—W. K. Newman, Peerless Woolen Mills, Rossville, Georgia.

Councilor—Jack Anderson, Peerless Woolen Mills, Rossville, Georgia.

The Sectional Committee will be elected at the next meeting.

Respectfully submitted,
HOMER WHELCHEL, *Secretary*

MEETING, NEW YORK SECTION

A SYMPOSIUM on synthetic fibers and their future development will be held at the meeting of the New York Section on February 4th at the Downtown Athletic Club, 19 West Street, New York City. The speakers, who have been asked to confine their remarks to about 15 minutes, will be as follows: Dr. Harold DeWitt Smith, A. M. Tenney Associates, "Acetate"; O. B. Bromley, Aralac, Inc., "Aralac"; C. K. Seid, American Bemberg Co., "Bemberg"; R. A. Ramsdell, Nylon Division, E. I. du Pont de Nemours & Co., Inc., "Nylon"; Dr. Frederic Bonnet, American Viscose Co., "Viscose and Vinyon."

ANNIVERSARY MEETING, PIEDMONT SECTION

THE Piedmont Section was organized twenty years ago and appropriate plans are being made for a twentieth anniversary celebration on March 25th in Greenville, South Carolina, at the Poinsett Hotel. Hyman Field is in charge of arrangements and it is hoped that all the past chairmen of the section will be present. Hotel reservations should be made directly with the Poinsett Hotel and banquet reservations should be made through Secretary Leland G. Atkins, Southern Dyestuff Corp., Charlotte, N. C.

Further details concerning this meeting will appear in future issues.

UNEMPLOYMENT REGISTER

Members of this association, who are without employment, should forward a statement as to their qualifications and experience. This information will subsequently appear on these pages with an identifying key number. Employers are also requested to file with the American Dyestuff Reporter any vacancies which may occur in their business.

NOTICE TO EMPLOYERS

Personal Histories and Employment Records of the following applicants are on file at the office of the American Dyestuff Reporter. Prospective employers may examine them without obligation.

Key: A—Laboratory and research; B—Dyeing or printing; C—Finishing; D—Sales; E—Instruction; F—Executive.

A-2

Education—Graduate, Lowell Textile Institute, B.T.C., 1933.
Experience—Experienced as textile chemist, chemist-spotter, agricultural chemist and U. S. Army inspector on cotton, rayon, woolens and worsteds. Seeks research or control position with future. New England preferred.
Age 34; married; references.

A-3

Education—B.S. in chemistry, Lehigh University.
Experience—Experimental engineer and analytical chemist, 8 mos.; assistant superintendent of silk corporation, assisted in planning and directing production, in charge of laboratory, technical work, personnel, purchasing, etc., 2 years; inspector of ordnance material, to the present. Seeks position as chemical engineer or chemist.
Age 26; single; references.

A-B-C-F-3

Education—High school and full apprenticeship.
Experience—Practical Dyer and finisher. Long experience on specialties for men's wear trouser trade in cottons, cotton and rayon mixtures and cotton and Celanese. Is disposing of interests in progressive finishing plant and seeks position as manager, assistant manager or technical advisor. Thoroughly understands requirements of Quartermaster, especially on herringbone constructions.

C-1

Experience—Experienced as assistant finisher, finisher and superintendent of finishing since 1923. Experience on automobile cloth, boucle overcoatings, high grade men's wear worsted, low grade woolens, medium grade plaid-back overcoatings, fleece finish overcoatings. Bolivias, kerseys, medium-grade men's piece dye suitings, uniform cloth, flannels, ladies' dress goods and coatings, government serge and elastique fabrics, marine wool, flannel shirtings.
Age 37; married, 3 children; references.

C-2

Education—Completed course in textile engineering and chemistry except for final half-year at Clemson College.
Experience—11 years of experience in finishing operations, including 8 years as overseer. Experienced on all types of cotton cloths. Experienced on pure finishes, backfilling, Sanforizing, pre-shrinking, and application of several types of water repellent finishes. Seeks position as overseer of finishing department.
Age 32; married; references.

Lapel buttons, bearing the seal of the Association can be purchased by members in good standing, from the Secretary, for $1.50 each.

OBITUARY

MILTON J. HEIM

MILTON J. HEIM, manager of the Central Division of National Starch Products Inc., with branch office headquarters at 1305 Germantown Ave., Philadelphia, died December 24 at the age of 49, after a short illness.

Mr. Heim had been connected with the organization for 25 years and was considered an expert on adhesives and starch products. He was well known in many industrial fields and was an active member of numerous trade organizations, including the National Paper Box Manufacturers Association, the Tri-State Packers Association, and the Pennsylvania Canners Association. In addition, he was a member of the William B. Schnider Masonic Lodge No. 419.

He is survived by his wife, and a brother.

DR. JOHN S. FONDA

DR. JOHN SUTLIFF FONDA, assistant director of sales, Grasselli Chemicals Department of E. I. du Pont de Nemours & Company, died December 22 in the Delaware Hospital of a heart attack following complications contracted from pneumonia. He would have been 43 on December 29.

Dr. Fonda had been with du Pont for 18 years, joining the company's Rayon Department at Buffalo, N. Y., as research chemist directly after his graduation with a Ph.D. degree in chemical engineering from Cornell University in 1925. At that time rayon was an infant industry and Dr. Fonda merits a place among the pioneers in research on American synthetic yarns.

Dr. Fonda was born in Johnstown, N. Y. He attended the Johnstown schools, was awarded a New York State Tuition Scholarship to Cornell University in 1918, where he majored in physical chemistry, and received a bachelor of science degree in 1922. He was an instructor in the chemistry department at Cornell while studying for his doctorate.

Four years after entering the employ of the Du Pont Company Rayon Department, then known as the du Pont Rayon Company, Dr. Fonda was made research supervisor. From 1936 to 1937, he served as manager of viscose rayon research, moving to Wilmington, Delaware, in the latter year where he was transferred to the managership of development research of the du Pont Grasselli Chemicals Department. At his death, Dr. Fonda was assistant director of sales in charge of all technical sales activity.

Active in Delaware Rotary Club circles, Dr. Fonda was also president incumbent of the Cornell Club of Delaware, a past chairman of the American Chemical Society, Western New York Section, and a member of the Delaware Section. He was a member of the Tau Chapter of Alpha Chi Sigma and belonged to the honorary graduate school society, Sigma Xi.

Dr. Fonda made important contributions to the field of rayon research, several patents being issued in his name. One of the most noteworthy of his developments was a process for improving the quality of rayon textile yarns through innovations in both mechanical and chemical treatments.

He is survived by his wife, a daughter, and three sisters.

MEET THE AXEES
The Gremlins of Accidents

Axees aren't at all angelic,
And that includes this smarty, Elec.
He plays tricks with loose connections,
Frayed lamp cords and your neglections.
Watch him; you can't hear him knocking;
Keep him out—his conduct's shocking!

NATIONAL SAFETY COUNCIL

• BOOKLET ON FIRE RETARDING

A demand for fire-retardant materials, which also provide resistance to mildewing, weathering, water and other solubilizing agents, was brought about by the widespread use of war supplies under all types of weather conditions in all parts of the world. To meet this demand, a Zinc Borate of low water solubility was developed by The New Jersey Zinc Company and is called Zinc Borate-3167.

It is stated that Zinc Borate-3167 has been used in the war effort in large quantities, especially in fire-retardant compositions for treating textile fabrics such as camouflage nettings, osnaburg cloth, cotton duck, and cotton drill. Generally, resinous-like chlorinated hydrocarbons are used in conjunction with Zinc Borate. This product is also incorporated in electric cable sheathing to help prevent the spread of any fires on shipboard.

It appears that the action of Zinc Borate-3167 is catalytic rather than mechanical. The exact mechanism has not been determined. However, there is considerable experimental evidence to indicate that, at temperatures approaching the ignition point, Zinc Borate-3167 catalyzes the decomposition of the chlorinated materials, which gives the fire-retardant effect. In cellulose applications, carbonization of cellulose below flame temperatures is accelerated. Carbon is formed through charring without burning, thus effectively retarding the flame and giving efficient protection against afterglow.

The story of Zinc Borate-3167, including its physical and chemical properties, is told in a new booklet recently issued by The New Jersey Zinc Company. Copies are available on request addressed to their Development Products Division, at 160 Front Street, New York 7, New York.

• NEW STANDARDS LIST

The American Standards Association announces the publication of its new list of standards. There are more than 600 standards listed, of which 64 have been approved or revised since the last price list was printed (April, 1943). The standards cover specifications for materials, methods of tests, dimensions, definitions of technical terms, procedures, etc.

One important phase of the work built up during the 25 years that the ASA has been in existence, is in the field of safety engineering. The new list includes 95 safety standards.

American Standards are constantly revised to keep up with the advances in industrial methods. This list represents the cumulative work of the past 25 years in practically every engineering and industrial field.

Since the war, the ASA has been working very closely with government agencies and with the Armed Services to provide specifications for certain of the materials necessary to our war effort. Because these standards are developed through an accelerated procedure, they are designated as American War Standards. These are listed separately, and to date, there are 40 already completed and many more under development. These war standards have been produced in the field of safety work, ma-

chine tools, quality control, photography and radio, just to mention a few. Every government order is based on specifications: standards are used to accelerate production, conserve materials, maintain a balance between quality and price control, simplify inspection, contracting and sub-contracting. All of them are designed to relieve shortages of time, material and man-power.

In each case, the standards approved by the ASA represent general agreement on the part of maker, seller, and user groups as to the best current industrial practice. More than 600 organizations are taking part in this work.

The complete list of American standards should serve as valuable reference material to engineers, manufacturers, purchasing agents, etc. It will be sent free of charge to anyone interested in this work. Requests should be addressed to the American Standards Association, 29 West 39th St., New York 18, N. Y.

• JOINS HART PRODUCTS

Thomas C. Morris has recently joined the technical staff of the Hart Products Corp. of New York, manufacturers of chemicals for textile processing. He received his A.B. degree in Mathematics and B.S.E. in Chemical Engineering at the University of Michigan in 1932. Continuing his studies as a graduate assistant, he received his M.S.E. in Chemical Engineering in 1934, doing research work on the "Anti-oxidation of Linseed Oil Films."

Thomas C. Morris

From 1934 to 1938 he was with the du-Pont Company, where he did considerable work in the sulfonation of oils, fats and alcohols. Before joining Hart Products, Mr. Morris was for three years Production Supervisor in the Chemical Warfare Service at Edgewood Arsenal, Maryland. In his technical work for the Hart Products Corporation, Mr. Morris will concentrate on the development of new products for the textile industry.

• PURCHASES UNITED COLOR AND PIGMENT

Calco Chemical Division, American Cyanamid Company, announced recently the purchase from Interchemical Corporation of its United Color and Pigment Company Division located in Newark, New Jersey.

United, with manufacturing facilities covering 8 acres and employing some 500 people has been a major factor in the production of organic and inorganic chemical colors. In peace time their products go to all types of color-consuming industries and since the outbreak of war they have also been supplying heavy demands for pigments to be used in camouflage and protective coatings for military purposes.

The Calco Chemical Division manufactures organic intermediates and dyes, many of which are raw materials for the production of organic chemical colors. The combined production as well as research and technical service facilities is expected to make possible greater contributions to the pigment consuming industries.

According to the Calco statement the new unit will be known as United Color and Pigment Department, Calco Chemical Division, with "no change of management, personnel or policies contemplated."

• MODERN pH AND CHLORINE CONTROL

A completely revised 83 page combination handbook and catalog (6th edition) is available from W. A. Taylor & Co., 7300 York Road, Baltimore 4, Md. Fifty pages are devoted to (1) a simple, non-technical explanation of the meaning of pH control and the methods for making colorimetric determinations; (2) precautions to be observed; (3) discussion of the application of pH and chlorine control to 31 different fields, including textiles, water purification and softening, boiler water, etc., (4) a technical discussion of the meaning of pH control. These four sections bring together, in condensed form, information which cannot be obtained elsewhere except by reference to innumerable textbooks and original articles. The remaining 33 pages contain descriptions of Taylor Slide Comparators for general pH and chlorine control, determination of phosphates in boiler water for prevention of corrosion and scale formation, and for analysis of water for iron, silica, color, manganese, etc. A copy will be sent free on request.

• APPOINTED ADVERTISING DIRECTOR

H. V. Higley, president of Ansul Chemical Company, Marinette, Wisconsin, announces the appointment of R. C. McNeely to direct its advertising. Mr. McNeely has a background in the advertising field extending over a period of 22 years.

His last connection was with Signal Electric Manufacturing Company, Menominee, Michigan, as sales and advertising manager, which post he held for 12 years. Prior to that he was assistant advertising manager for The Lloyd Manufacturing Company of the same city.

McNeely will handle the advertising duties for both Ansul and its subsidiary, duGas Engineering Corporation.

• SALES AND TECHNICAL SERVICE

C. H. Patrick, P. O. Box 300, Salisbury, N. C., has announced the formation of a sales and technical service organization for the textile finishing industry. Mr. Patrick has been connected with this industry for the past fifteen years and his experience includes technical and practical plant work.

C. H. Patrick

Until recently he was superintendent of the North Carolina Finishing Co., Salisbury, N. C., and previously held a similar position with the Union Bleachery, Greenville, S. C., for a number of years. Among the firms Mr. Patrick represents are: Pabst Sales Co., Chicago, Ill.; The Hart Products Corp., New York, N. Y. (selected accounts on Kopan only); and the Nuodex Products Co., Inc., Elizabeth, N. J.

• AWARDED LEGION OF MERIT

Lieut. John C. Wilmerding, U.S.N.R. of the New York office of the American Viscose Corporation, has been awarded the Legion of Merit for exceptionally meritorious conduct in the performance of outstanding service as Gunnery Officer of a destroyer operating in the South Pacific area, during the period from June, 1942, to October, 1943, it was made known recently. The presentation was made by Admiral William F. Halsey, U.S.N., on Dec. 12, 1943. Lt. Wilmerding is now on Admiral Halsey's staff.

• INVITATION TO USE TEXTILE INSTITUTE'S FACILITIES

The Council of the Textile Institute believes that there will be a number of members of the American and Canadian Forces at present in Great Britain who were formerly engaged in the textile industry and who wish to maintain contact with the industry during the war period. It has been decided, therefore, to invite such persons interested in the textile industry to take advantage of the facilities which are available through the Textile Institute.

Several sections of the Institute arrange programs of meetings during the winter session when textile lectures and discussions are held on matters of technical and topical interest. There is also a library which contains many trade and scientific journals in addition to standard works and reference books on textiles. The headquarters of the Institute are in Manchester, England, and any member of the Forces in England, from overseas, who was connected with the textile industry and desires to take advantage of the facilities available should communicate with The Acting General Secretary, The Textile Institute, 16, St. Mary's Parsonage, Manchester, 3.

• WOBURN CHEMICAL CORP.

To conform more with the present nature of its business, the name of Woburn Degreasing Co. of N. J. has been changed to Woburn Chemical Corp. (N. J.). Announcement was made by A. G. H Reimold, President of the company, following authorization of the change at a meeting of the stockholders. The company is one of the nation's leading producers of organic chemicals.

"This change of name follows fifteen years during which the emphasis of our work has shifted largely to the heavy production of specification fatty acids and synthetic drying oils," Mr. Reimold disclosed. "Our original operations were begun in 1907 with the degreasing of leather, a step necessary to the production of patent and other specialty leathers. Woburn has handled 95 per cent of American production in the degreasing of leather since that time, but the operations which were carried on for leather and wool by this company have now been transferred entirely to the Woburn, Mass., plant of one of our affiliated companies.

"Heavy production of organic chemicals is now centered in plants at Harrison, N. J. and Toronto, Canada. Production of insecticides and fungicides will continue at Elkton, Md. and Moore Haven, Fla."

• APPOINTED SOUTHERN MANAGER

Sumner H. Williams has been appointed Manager of the Southern office of the General Dyestuff Corporation at Charlotte, N. C., in succession to B. A. Stigen, deceased.

Sumner H. Williams

Mr. Williams having been Assistant Manager of the Charlotte office for many years, he is well equipped to carry out the policies which have brought the corporation to its present position and to further extend the service to its customers.

• RETIRES AS PRESIDENT

E. M. Allen announces his retirement as President of The Mathieson Alkali Works (Inc.) effective January 1, 1944, and the election of G. W. Dolan as his successor. Mr. Allen will continue to hold his office as Chairman of the Board of Directors of the Company.

Mr. Allen became President of the Company in 1919 and since 1938 has been Chairman of the Board and President.

Mr. Dolan joined the Mathieson organization in 1930; has held various positions of responsibility and in 1941 was elected Executive Vice President of the Company.

• NEW AMERICAN VISCOSE BOOKLET

The American Viscose Corporation is currently distributing to retail stores and consumers a new booklet, "Your Guide to Rayon," designed to provide basic facts about rayon for retail stores sales personnel and for purchasers and users of rayon fabrics and merchandise.

After brief explanations of the chief characteristics of rayon and its methods of manufacture, the booklet describes how rayon fabrics are woven and knit and gives an interesting glossary of rayon fabrics. The importance of proper dyeing and finishing is then emphasized, the booklet bringing out the point that "The yarn, the weaving, dyeing, printing, and finishing operations must all be of high standard before the finished cloth can be pronounced a serviceable fabric."

Other sections of the booklet are devoted to descriptions of the tests used in connection with the American Viscose Corporation's "Crown" Tested Plan and how this plan functions to provide serviceable rayon fabrics. "By this plan," the booklet states, "fabrics containing 'Crown' rayon yarn or staple fiber—the yarn and staple fiber produced by American Viscose Corporation—are given laboratory tests which predict their ability to give customer satisfaction." The principal tests are for fabric strength, dimension restorability, and color fastness. Fabrics which pass the tests are known as 'Crown" Tested fabrics and are permitted to carry the "Crown" Tested identification.

The concluding section of the booklet gives the answers to questions about rayon merchandise frequently asked by retail store customers. These include "How should a rayon dress be washed?" "How should rayon fabrics be ironed?" "Will white rayon turn yellow after washing?" and "Should rayon fabrics be protected from moths?"

• PURCHASES BOSSON & LANE

Textile Service, Inc., has announced the purchase of Bosson & Lane, Inc., of North Quincy, Mass. The name Textile Service, Inc., will be discontinued and the business henceforth will be conducted under the name of Textile Service and Chemical Corp. The address is 6 North Street, North Quincy 71, Mass.

• CHANGE OF OWNERSHIP

It has been announced that, effective December 1st, 1943, Wells & Richardson Co., Inc., of Burlington, Vt., became the property of the A. S. Boyle Co., a Subsidiary of American Home Products Corp. It is now known as the A. S. Boyle Co., Burlington Branch, Burlington, Vt. There is no change in the Burlington management. F. L. Prescott is textile chemist.

• 1943 A.S.T.M. STANDARDS ON TEXTILE MATERIALS

In addition to each of the 78 standard specifications, tests, and definitions, etc., issued by the American Society for Testing Materials in its work in the field of textiles, this 1943 compilation includes considerable other related information and data on calculation of number of tests for textile materials, a yarn number conversion table, humidity tables, and abstracts of papers. There are also given several tests published for information and comment,

for example, on accelerated ageing, designation of yarn construction, etc. The extensive glossary of terms gives a list of man-made and natural fibers, defects in woven fabrics—definitions and photographs, and terms relating to hand of fabrics.

The first ninety pages provide general standards on such subjects as air permeability, colorfastness to light, finishes, fire-retardant properties, resistance to insect pests, and to microorganisms, and to water. Six standards pertain to asbestos tape and four to bast and leaf fiber products, jute, etc. There are 26 standards on cotton; four pertaining to various types of glass—yarn, fabrics, tubular sleeving and braids, and glass tapes. Another section of this widely used book gives requirements on rayon and silk and there are nine standards on wool and its products. Included in this year's compilation is the Presidential address by H. J. Ball, Professor of Textile Engineering, Lowell Textile Institute, Lowell, Mass., on "The Relation of the A.S.T.M. to the Textile Industry," and other papers dealing with synthetic textile fibers and the Balls sledge cotton sorter.

Copies of this 440-page publication can be obtained from A.S.T.M. Headquarters, 260 S. Broad St., Philadelphia 2, Pa., at $2.25 per copy.

• LUMINESCENT TEXTILES

Luminescent draper and wall covering materials are in the post war picture. These decorative items will have an especial appeal for use in connection with television dark rooms in the home but will be also of interest for the interior decorator of clubs, cocktail bars, theaters, and other commercial and public places.

In television dark rooms, the luminescent decorations will provide the source of light of very low intensity which will permit movement within the room without interference with the darkness required for television broadcast scenes on the screen. They may be used in connection with luminescent tapes, carpets or rugs, ashtrays, flower vases or bowls, or other glowing objects that help to identify items of furniture or other obstructions.

In public gathering places, too, where lighting of very low intensity is desirable, or where novel decorative effects in glowing colors are warranted, luminescent pigments will be used extensively. Of course, near ultraviolet (or "black") lighting generally will be used as the radiating light source to activate the luminescent materials in such applications.

The most efficient activating light source is the high pressure mercury arc lamp, equipped with nickel oxide (ultraviolet) glass filter. The argon glow lamp is another suitable black light source. However, other types of light sources, suitably filtered, make satisfactory activating light sources in the near ultraviolet range. Included are the newer type fluorescent lamps and ordinary incandescent light bulbs, with nickel oxide glass filters added. Many types of black lights in a lower price range are expected to be made available after the war, thus widening the markets for fluorescent decorative materials and treatments.

(*See photographs below*)

• RAYON PRODUCTION

United States production of rayon in 1943 totaled approximately 660,000,000 pounds, representing a 4 per cent gain over last year's output and establishing a new production record for the industry, according to William C Appleton, president, American Viscose Corporation. Output in 1942 amounted to 633,000,000 pounds and in 1941 to 573,000,000 pounds. Production has more than doubled in the past five years, the output in 1938 having totaled 288,000,000 pounds.

Rayon's versatility and ability to fill many varied needs was demonstrated during the year by its use in many types of military equipment and in a broad range of civilian applications. The principal military uses included extra-strength tire cord and tire fabrics, parachutes for fragmentation or anti-personnel bombs, cargo and supply parachutes, uniform linings, and self-sealing gasoline tanks.

A major development of the year just past was commencement of the large-scale program for expanded output of rayon tire cord yarn ordered by the War Production Board. This program calls for production to be increased to a level of 240,000,000 pounds annually. The program was initiated to provide sufficient rayon tire cord for the manufacture of tires for our military aircraft, armoured cars, heavy guns, Army trucks and other motorized equipment, and also for the manufacture of the new synthetic rubber tires. These tires generate more heat than those made with natural rubber. Rayon tire cords possess exceptional ability to resist such heat and to retain their strength under heat, and are regarded as indispensable to the successful carrying out the nation's synthetic rubber tire program.

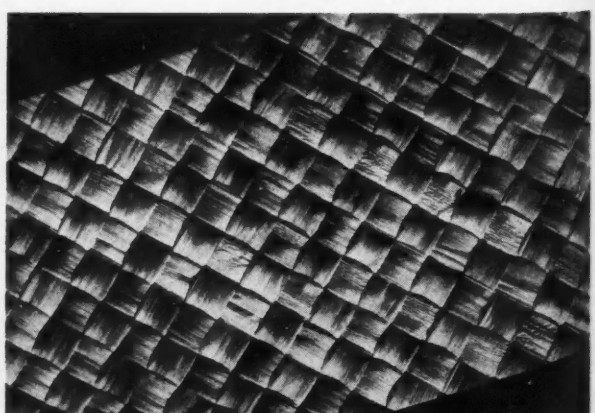
Under the provision of the State Department's Good Neighbor Policy, designed to increase economic collaboration and good will between the two Americas, United States rayon producers, as in 1942, set aside each month a specified amount of their production for export to the Latin American countries.

War demand for rayon affected the hosiery situation by absorbing the extra-strength viscose rayon yarns for tire cords, parachutes and self-sealing gasoline tanks. Certain types of these yarns had been developed specifically for use in hosiery.

Examples of textiles printed with luminescent pigments such as could be used as draperies or decorative wall panels. The photograph was taken under a black light.

A phosphorescent furniture treatment applied by declacomania which is suggestive of what may be accomplished in the field of interior decoration utilizing luminescent pigments. Photograph taken under black light.

Photos, Courtesy, New Jersey Zinc Co.



Their application in this field must now wait until after the war is over. Meanwhile, although standard rayon yarns are being used, the quality of rayon stockings was very greatly improved during the year.

In the civilian field rayon provided a large proportion of the country's essential clothing requirements. Surveys show that considerably more than one-half of all women's dresses sold today are made of rayon and the fiber is being used on an increasing scale in fabrics designed for men's wear.

The increasing versatility of rayon, demonstrated in 1943 by its important wartime applications, will make the fiber of wider usefulness in times of peace. Now, however, the industry must devote its accumulated skill and experience to helping win the war at the earliest possible date.

• HIGH TWIST HOSIERY YARNS

It is claimed that the need for a simple and inexpensive method of preparing high twist rayon hosiery yarns has been met by the National Oil Products Company, Harrison, New Jersey, in the development of Nopco Hosiery Treatment No. 2 for Viscose and Bemberg yarns.

This new treatment is a method of soaking the hosiery yarns previous to throwing with water emulsified synthetic waxes. Regardless of manufacture, denier, or pretreatment on the yarns, the treatment may be used on all types of rayon hosiery yarns.

While designed primarily for high twist yarns, it may also be used to advantage on the lower twist yarns. Adequate protection to the individual filaments as well as surface lubrication necessary to clear, uniform stitch formation is said to be provided.

A treatment may be reclaimed and reused.

A comprehensive outline of Nopco Treatment No. 2, its application and control, as well as methods of testing, and adjusting the bath are described in a booklet that may be obtained from the company.

• NEW BUTTERWORTH WASHER

H. W. Butterworth & Sons Company have developed a 6-Roll Washer which is equivalent to a Four-Compartment Washing Machine. It is claimed that, not only does it assure considerable saving in floor space, but it is one third cheaper than a Four-Compartment Washing Machine with individual motor drive. The 6-Roll Washer is said to do a better washing job and to use less water than any other method.

This latest type Butterworth Vertical

MEET THE AXEES
The Gremlins of Accidents

Who's the guy who makes you wish he
Hadn't made the rug go swishy?
Who puts buckets on the stairway,
Makes you walk the I-don't-care way?
Well, just open wide your eye;
You'll find him hiding there—it's Sly!

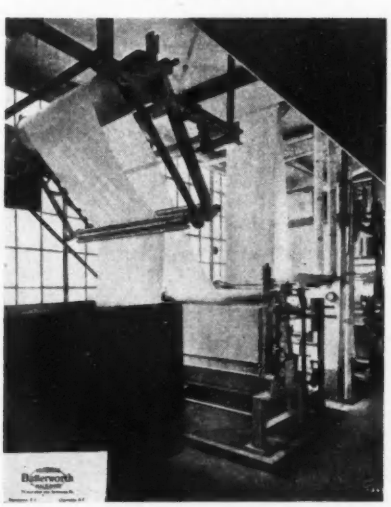
NATIONAL SAFETY COUNCIL

Washer consists of top and bottom rubber covered rolls, 14 inches in diameter by 50 inches face, and four intermediate rubber covered rolls, 8 inches in diameter.

The cloth passes through a three bar expander with a hot spray in front of the first nip. Before and after entering each succeeding nip, the cloth passes around the fly roll, the position of which causes the liquor to puddle in front of each nip by means of a hot spray. The cloth is sprayed with hot water on both sides as it goes around the fly roll.

The Butterworth 6-Roll Washer is equipped with a stainless steel liquor box for catching the wash liquor. Because of the contamination of the water, the cloth is kept from dipping into the liquor. The machine also contains stainless steel splash pans with doors that allow access to the machine on the entering and delivery sides.

New 6-Roll Washer Developed by Butterworth.



• GENERAL MANAGER, ELECTROCHEMICALS DEPT.

The appointment of Frank Sanderson MacGregor to be general manager of the Electrochemicals Department was announced recently by E. I. du Pont de Nemours and Company.

The appointment becomes effective January 1, 1944, when Mr. MacGregor, since February, 1942, assistant general manager of the department will succeed Dr. E. A. Rykenboer who is retiring December 31 on account of ill health.

A native of Lawrence, Mass., Mr. MacGregor attended Greenwood School and Hyde Park School in Boston and was graduated from Massachusetts Institute of Technology with the degree of S. B. in 1907. He was engaged in mining and metallurgical work with the U. S. Smelting Company and the American Zinc Lead & Smelting Company from 1907 through 1914, and was a consulting engineer in Boston from 1914 to 1916.

He joined the Du Pont Company in 1916 becoming successively assistant director of the Development Department, whre he helped to lay the foundation for the company's expansion from the explosives into the diversified chemicals field; control manager of the former paint department, in 1922; assistant director of the Development Department, 1923 to 1928, serving also as managing director of the Hotel Du Pont Company from 1926 to 1928.

He was general manager of the Acele Department of the former Du Pont Rayon Company, 1928 to 1934; president and general manager of Ducilo S. A. Productora de Rayon, Du Pont affiliate in Buenos Aires, 1934 to 1939; served on special assignment from 1939 to 1941, becoming director of the company's priorities division in June that year.

Mr. MacGregor is a member of The Franklin Institute, Philadelphia; the Arnold Fish and Game Preserve, Canada; Delta Tau Delta fraternity; and the Westminister Presbyterian Church, Wilmington. His home is at 2307 Ridgeway Road, Wilmington.

Dr. Rykenboer was born in Rochester, N. Y., and entered the University of Rochester from which he received his B. S. degree in 1912, followed a year later by his master's degree. After four years combining study and an instructorship at the University of Michigan, that institution conferred upon him the degree of Ph. D. in chemistry.

Starting as a research chemist for Roessler & Hasslacher Chemical Company at Niagara Falls, N. Y., in 1917, he became senior chemist in 1921 and superintendent of production in 1926. He became a director and general superintendent in 1930 when Roessler & Hasslacher was acquired by Du Pont. He was elected vice president in 1931 and executive vice president in 1932. He subsequently became assistant general manager of the R. & H. Department in 1933 and on June 2, 1933, succeeded C. K. Davis as general manager. In 1942 the R. & H. Department became the Electrochemicals Department.

Dr. Rykenboer is a member of the American Chemical Society, the American Electrochemical Society, the American Institute of Chemical Engineers, and of Sigma Xi and Phi Lambda Upsilon fraternities. His home is in Lewiston Heights, N. Y., near Niagara Falls.

• APPOINTED ASST. GEN. MGR.

Appointment of Milton Kutz as acting assistant general manager of the Electrochemicals Department of E. I. du Pont de Nemours & Company, effective January 1, was announced by Frank S. MacGregor, general manager of the department.

The appointment marks the return of Mr. Kutz to the post which ill-health forced him to relinquish 18 months ago for a term of less active service.

Born at Logansport, Indiana, Mr. Kutz was educated in the public schools of New York. He joined the Roessler and Hasslacher Chemical Company in 1897, rising during 33 years of service to vice president and a director of the firm.

Upon the merger of that company with du Pont in 1930, Mr. Kutz became director of sales. When the company was established as the R. & H. Chemicals Department in 1933, he was named assistant general manager of the new department.

• AMERICAN VISCOSE PAMPHLETS

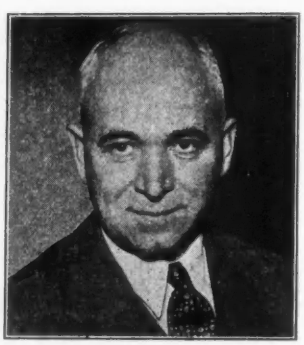
The American Viscose Corporation is distributing a series of informative leaflets, which have been prepared to give consumers and retailers basic information about rayon and how to care for rayon garments to obtain maximum wear and serviceability. Largely in response to requests, more than 2,500,000 of the leaflets have been distributed to date.

Subjects covered by the leaflets include such varied topics as "How To Care For Rayon Fabrics," "Simple Rules For the Care of Spun Rayon and Wool Blended Fabrics", "Guide to Color Fastness in Today's Fabrics", "Tips on Sewing With Rayon", "How to Recognize Fabric Constructions", "The Selection and Care of Rayon Hosiery", "The Up To Date Story of Rayon", "Glossary of Rayon Fabrics", "How To Buy Rayon Fabrics", and "This is the Way to Wash Your Rayons".

It is stated that the leaflets have proved of value to consumers in helping them to get longer wear from their clothing, and also have helped many retail stores in the instruction of salespeople and the preparation of advertising dealing with conservation and care of clothing.

• TRANSFERRED TO SALES DEPT.

Effective January 1, 1944 Lawrence H. Flett was transferred from the Buffalo Plant to the Sales Department, National Aniline Division, Allied Chemical & Dye Corporation and is located at the Executive Offices, 40 Rector Street, New York, N. Y.



Lawrence H. Flett

In his new capacity of Director of the New Products Division, Mr. Flett, who holds the Schoellkopf Medal for his work on Nacconol, National Synthetic Detergent, will afford specialized technical research service to National's customers.

It is understood National Aniline Division has comprehensive Post-War plans on new products development supplementing the many already very successful items such as detergents, anti-skinning agents, etc., introduced in recent years.

• 19TH ANNUAL DCAT DINNER

Edward T. T. Williams, Chairman of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, announced following a meeting of the Section's Executive Committee on January 6, that the 19th Annual Drug, Chemical and Allied Trades Banquet to be held under the auspices of this organization would take place on Thursday, March 9, 1944, at The Waldorf-Astoria, New York City.

The price of the tickets will be the same as last year, namely $10.00 each; tables of ten at $100.00.

It was decided that dress on this occasion would be optional.

Mr. Williams also announced the appointment of various dinner committees including Guy L. Marsters (Norwich Pharmacal Company) Chairman of the Reception Committee; John J. Toohy (E. R. Squibb & Sons) Chairman of the Program Committee; Robert B. Magnus (Magnus, Mabee & Reynard, Inc.) Chairman of the Dinner Arrangements Committee; William D. Barry (Mallinckrodt Chemical Works) Chairman of Publicity Committee.

• RETIREMENT PLAN

A monthly retirement income for life approximately equal to 40 per cent of the employee's pay, plus increased life insurance during active years, will be made possible for both hourly workers and salaried employees through a Pension Plan announced by Otto Haas, president of Rohm & Haas Company, Philadelphia chemical manufacturers.

The entire cost of the plan, which became effective December 31, 1943, will be underwritten by the company. The plan applies to employees with 5 or more years of service with Rohm & Haas and its affiliates, Charles Lennig & Company and Resinous Products & Chemical Company.

The amount of annuity will be based on the amount of the employee's earnings, and in conjunction with benefits provided under the Social Security Act, will be approximately equivalent to 40 per cent of his pay. Each participating employee will receive his first annuity payment at the normal retirement date, the December 31st nearest his 65th birthday. Should an employee leave the service of the company, he receives the full benefit of all money which the company has invested for him under this plan.

The plan provides for death benefits prior to retirement. It will be administered by a Pension Plan Committee composed of not less than 3 employees who will be appointed annually by the Board of Directors of the company. The plan was devised in cooperation with Towers, Perrin, Forster & Crosby, Inc., pension consultants of Philadelphia.

Keep
Backing
the Attack

▼

Fourth
War Loan

▼

Starting
January 18th

BOOK REVIEWS

Chemistry Made Easy, *by Cornelia T. Snell, Ph.D. and Foster Dee Snell, Ph.D., Consulting Chemical Engineer.* 1214 *pages, numerous illustrations and diagrams. Price* $7.95. *D. Van Nostrand Co.* 1943.

This book is unique in that it endeavors to give to beginners a reasonably complete survey of the whole subject of Chemistry, in an elemental way, and in the four volumes which comprise the set covers Inorganic chemistry, Organic chemistry and the fundamentals of Physical chemistry.

The authors state that they have endeavored, and successfully, to present a course in chemistry for home study, for those who have not had an opportunity to study chemistry in college. With conscientious study of these books it will undoubtedly be possible for many to obtain a basic knowledge of chemistry without long hours in the laboratory and the necessity of a teacher. The authors have tried to avoid a stiff and rigorous text book treatment of the subject but rather to humanize the subject with illustrations from every day life so that it will increase the intellectual curiosity of the reader and present the principles of the science in an understandable way, putting first things first, and progressing step by step through the more difficult portions of the subject.

In Volume I the theory and underlying principles of chemistry are given considerable attention; in Volume II the subject of Inorganic Chemistry is continued and Volume III is devoted to Organic Chemistry. Volume IV entitled Chemicals of Commerce has been prepared to meet a definite need. It is intended as a source of information on the composition of actual commercial products. This is not a chemical dictionary, although well towards 2000 individual compounds and substances have been briefly described, in commercial terms.

Textile Recorder Year Book 1942-1943. *A Textile Library in Brief. Managing Editor, Dr. W. Hubball. Originally compiled and edited by Frank Nasmith, Past President of the Textile Institute. Published by the Harlequin Press, Old Colony House, South King Street, Manchester, England.* 800 *pages. Price,* 10 *shillings* 6 *pence.*

This is the twenty-first edition of the year book, and the third to be published during the war, and contains an outline of the control scaffolding on which the war production of textiles is built. As usual, the book carries independent sections dealing with cotton, woolen and worsted, rayon, silk, flax and linen, jute, hosiery and knitting; textile testing, power transmissions and miscellaneous considerations with accompanying glossarys. The book has been revised and brought as nearly up to date as war conditions will permit.

OPEN FORUM

Questions

57. Aniline hydrochloride salt, as we have known it, consists of white plates with a greenish tint. We have recently received two shipments, one of which was very powdery and dark green in color and the other was also a very dark green, almost black, powder with black chunks, light in weight and very porous. On trying to dissolve this latter product we found a very fine black precipitate, which made it appear like a black liquid, but on standing, this fine precipitate would not settle. We tried to filter it through very fine cloth and a mat of cotton and the precipitate would go through. The same thing happened when we tried filtering through charcoal. We should like answers to the following questions:

To what extent is aniline salt oxidized in a dry state, and why should it turn to a dark green and even to a black insoluble fine powder?

Is it possible that any method of handling in transportation would bring about this decomposition?—**S.A.**

58. We are dyeing yarn on perforated tubes, which we call pressure dyeing. Consequently, the dye bath is much more concentrated than its former procedure, namely in skeins.

As a result, on heavy shades we get some sort of a coagulation after dyeing the yarn, and when this yarn is placed on a spool and passed on to the cutting-up trade, the tailors find difficulty in unwinding this thread, as it creates some sort of an electrolytic effect, thus retarding the passage of the thread through the eye of the needle.

Can you help us towards eliminating this problem? Thank you for your cooperation.—**B.S.**

Readers are invited to submit replies to the above questions. Payment will be made for those published.

Back the
FOURTH WAR LOAN
STARTING JANUARY 18th

Tall Oil—

(Concluded from Page 26)

ferred, it is fairly simple to gradually replace the present soap with tall oil soap. This can be done conveniently in 5 or 10% steps. Thus, if a batch requires 100 pounds of soap, use 90 pounds of the present soap and 10 pounds of tall oil soap. After using this mixture for a period of time it will be seen that little if any difference results. Then try 80 pounds of the regular soap and 20 pounds of tall oil soap. In this way the proportion of tall oil soap can be gradually increased until the regular soap is replaced, or until some proportion is found which will meet individual requirements.

SULFONATION OF TALL OIL

Sulfonated tall oil is being produced in commercial quantities, and a considerable amount of this product is used by the textile industry as a turkey red oil substitute. The procedures used to sulfonate tall oil are similar to those employed in sulfonating castor and similar oils, although tall oil appears to be somewhat more reactive on sulfonation. In sulfonating tall oil the temperature is usually kept below 20°C. The concentrated sulfuric acid used has varied all the way from 30 to 100% of the weight of tall oil taken, depending on the sulfonated product desired. As in sulfonating other oils, excess sulfuric acid is removed by washing with a brine solution. The pH of the sulfonated product can be adjusted through the addition of alkalies.

Refined tall oil can be sulfonated directly and in fact this is being done on a commercial scale. At the low temperatures necessary for sulfonation, crude tall oil becomes quite viscous and develops crystals. Because of this, it is better to sulfonate crude tall oil which has been diluted with an inert mineral oil.

METALLIC SOAPS OF TALL OIL

Metallic soaps of tall oil precipitate from aqueous sodium, potassium, or amine soap solutions of tall oil upon the addition of water soluble metal salts, as alminum or zinc sulfate. To waterproof textile fabrics the fabric can be immersed in a tall oil soap solution and then passed through a solution of the metal salt.

Copper soaps of tall oil have been found to have fungicidal properties and are usetl to mildewproof cloth. Specification T-1452, Amendment No. 6 of the Corps of Engineers of the U. S. Army, "Processing Sandbag Fabrics for Mildewproofing," permits the use of tall oil to extend the naphthenic acids used in mildewproofing compounds.

• Classified Advertisements •

The rate for "Position Wanted" advertisements in this column is 2 cents a word—with a minimum of 50 cents per insertion. For all other types of advertisements—i.e., help wanted, machinery or supplies for sale—the rate is $6.25 per column inch or less per insertion.

POSITION WANTED: DYESTUFF REPRESENTATIVE, graduate chemist, interested in securing new connection for sale of dyestuffs and chemical specialties. Write Box No. 498, American Dyestuff Reporter, 440 Fourth Ave., New York 16, N. Y.

POSITION WANTED: Export manager, 20 years experience, high class salesman, dyestuffs, chemicals and machinery, linguist. Capable promoter with outstanding record and background. Single—draft deferred, American born, age 38. Seeking executive position. Write Box No. 500, American Dyestuff Reporter, 440 Fourth Ave., New York 16, N. Y.

WANTED—Graduate chemist with 2 or 3 years experience in dyeing rayon, cotton and silk for progressive rayon dyehouse. Write Box No. 502, American Dyestuff Reporter, 440 Fourth Ave., New York 16, N. Y.

WANTED—Textile chemist for research and development. Experience with resins desirable. Submit details of training and experience, also snapshot. New York area. Write Box No. 503, American Dyestuff Reporter, 440 Fourth Ave., New York 16, N. Y.

SALESMAN WANTED: Eastern manufacturer of dyestuffs and chemical specialties is looking for a reliable man to cover the southern states. In applying give details of experience and salary desired. Write Box No. 504, American Dyestuff Reporter, 440 Fourth Ave., New York 16, N. Y.

WANTED: Textile chemist with experience in testing for permanent position in New York laboratory. Write Box No. 505, American Dyestuff Reporter, 440 Fourth Ave., New York 16, N. Y.

WANTED: Skein dyer, some knowledge of direct and vat dyeing on cotton and rayon yarns. Also in the market for several used Klauder Weldon or Giles skein dyeing machines. Write Box No. 506, American Dyestuff Reporter, 440 Fourth Ave., New York 16, N. Y.

Use
Reporter Classified
for Results!

SANDOZ PRESENTS *The color achievement of the month*

Exultant Red BY PACIFIC MILLS

These are times when Fashion must find new excitement in colors . . . for fabrics and accessories are limited.

Sandoz, a leader in dyes, congratulates Pacific Mills, a leader in worsteds and woolens, for its stunning red used in the brilliant officer's coat by Handmacher.

Thus, a fashion leader brings new interest to Mrs. America's wardrobe . . . and Sandoz, though busy supplying Chrome Dyes for war uses, shares in the achievement. For Sandoz Dyes aid Pacific Mills in producing colors of distinction — true and uniform.

Illustrative of Sandoz' developments directed toward more salesworthy and profitable dyeing, are the Metomega Chrome Colors — a full range — which reduce boiling time by as much as 50%. Furthermore, being easier to apply, they speed up the development of correct shading. Formulas can be checked after only 15 minutes.

To assist you in making full use of Sandoz' acid and chrome dyes for the woolen trade — also other lines for cotton and rayon dyeing — we maintain application laboratories in New York, Boston, Philadelphia, Charlotte, Los Angeles and Toronto. Stocks are carried in all these cities.

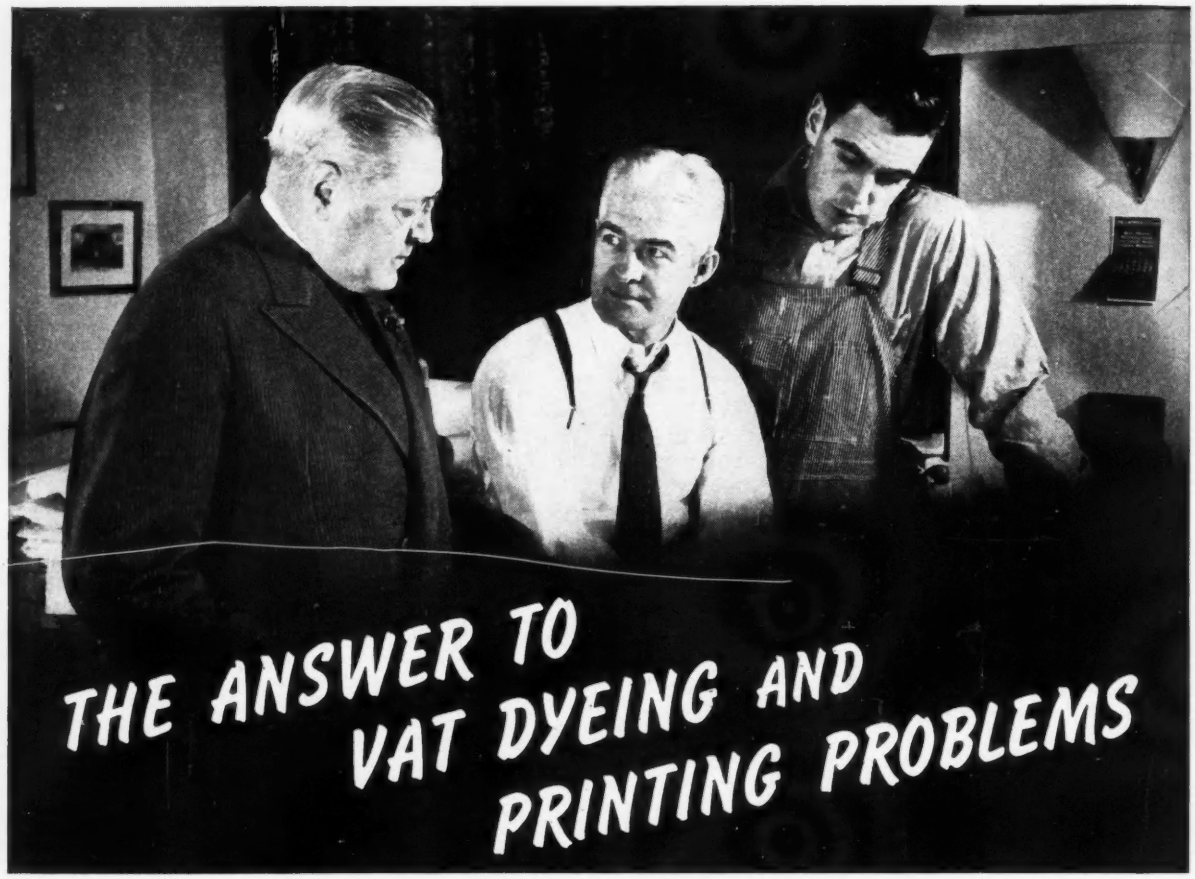
Branches in Chicago, Paterson and Providence.

Watch for another Sandoz "Color Achievement of the Month" — saluting another Sandoz customer among the leaders of the Textile industry. It will appear next month.

SANDOZ CHEMICAL WORKS, INC., 61 VAN DAM STREET, NEW YORK 13, N. Y.

SANDOZ *thinks ahead with textiles*

S SANDOZ



● When Jacques Wolf and Company released APASOL last Spring, it had already achieved an impressive laboratory record as a low-cost, high-efficiency sulphonated oil.

Today, APASOL has been proved through use. Over and over again the verdict is: APASOL provides better penetration . . . more even dyeing . . . brighter colors.

The reason why APASOL assures level dyeing and excellent penetration is that it suspends the dyes in a finely divided form. It is suitable to all types of hard water and solutions of such salts as Lime, Common, Fine and Epsom.

APASOL can be used in pasting dyestuff, wetting out fibre before dyeing and directly in the dyebath. It protects cloth against the action of alkali.

For printing, APASOL is unexcelled. Added directly to the paste, it aids reduction, protects fibres, facilitates aging, increases solubility and brightens colors.

Let APASOL answer *your* dyeing and printing problems!

APASOL

22% COMBINED SO_3

Write today for generous free sample

WOLF BRAND PRODUCTS

JACQUES WOLF & CO.

Chemicals **PASSAIC, N. J.**

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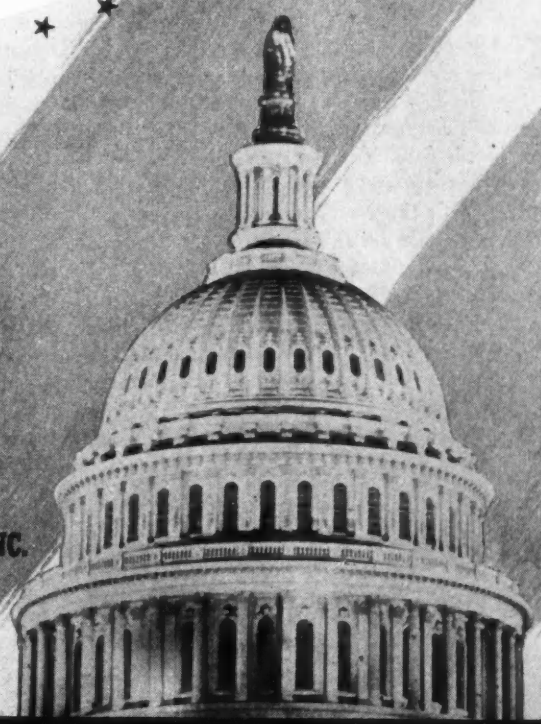

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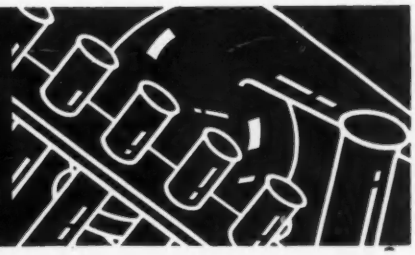

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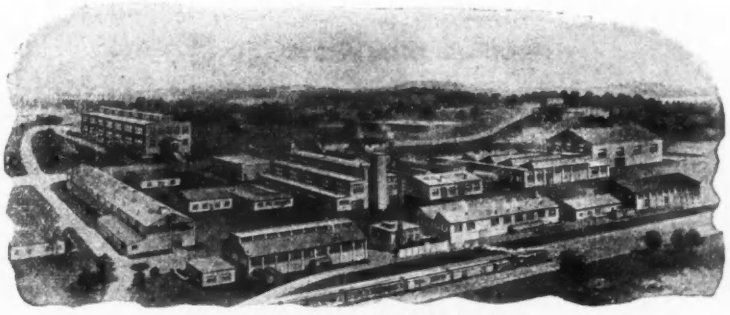

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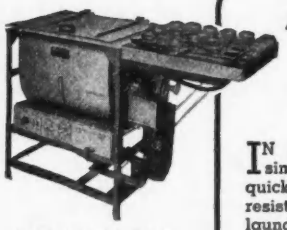

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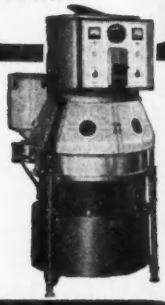

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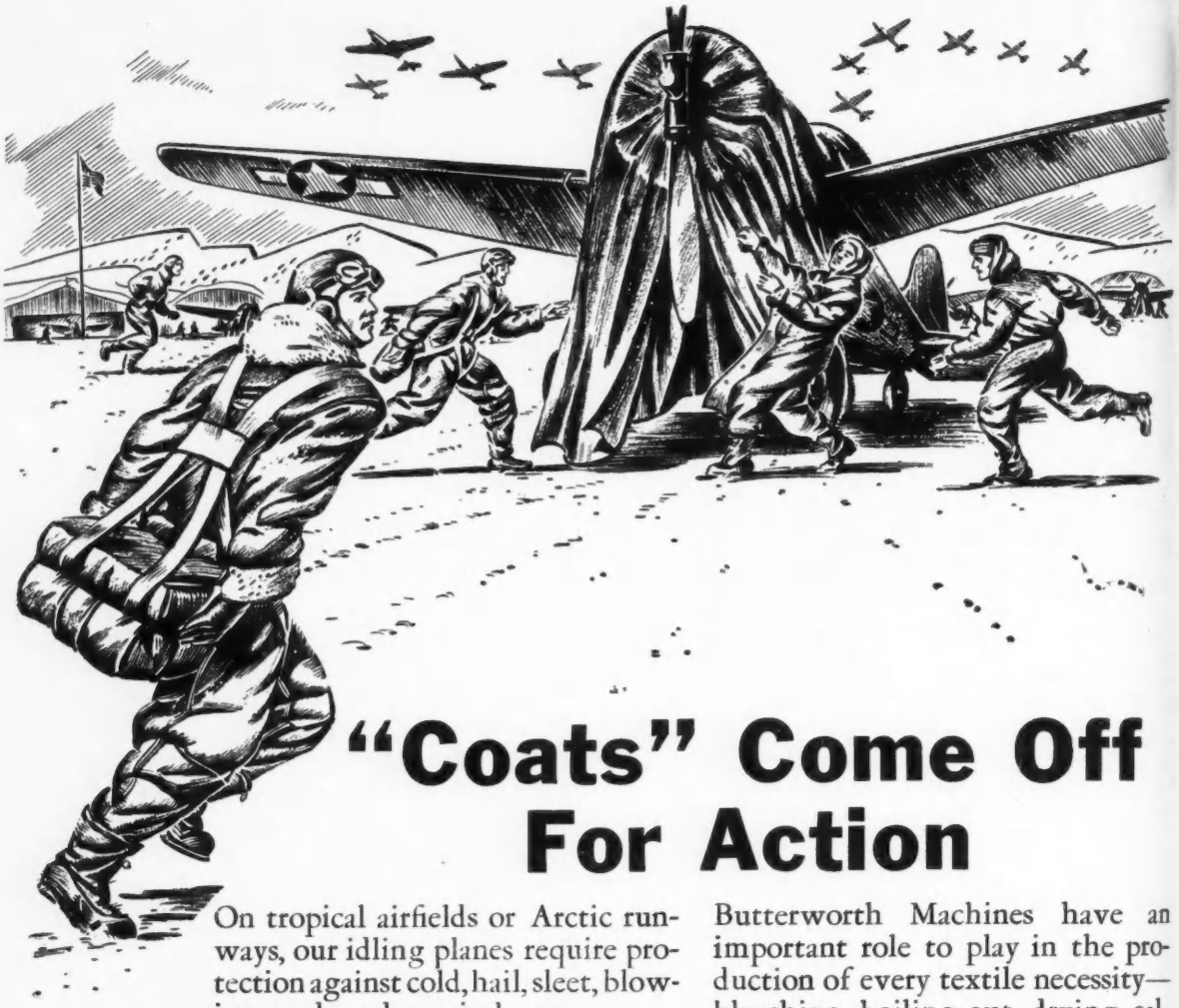

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THEN judge for yourself as many mills have done and profited thereby.

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